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Original Articles

The Surgical Treatment of Medical Diseases of the Abdomen[1]

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In considering such a topic as this, one is confronted at the outset with several problems. First, What *are* the medical diseases of the abdomen as contrasted with surgical diseases? Obviously, the classification depends on individual opinion and experience. The surgeon who stands daily at the operating table, seeing the protean pathological possibilities and sequences of many of the abdominal lesions, would be more inclined to include the earlier stages of many of these in the category of strictly surgical diseases than would the internist who does not see these striking and ofttimes irreparable processes revealed before his eyes. So often one must cry, Too late! Too late! The storm of controversy still rages about many of these points, but time and experience will combine to see the triumph of truth. Another factor affecting our classification is the concomitant organic integrity of the individual patient which must often influence the physician in his judgment of the treatment of his case, whether surgical or medical. Here we see that the same condition in one patient may be surgical, while in another it may be purely medical.

Our third problem is met in determining at what stage a lesion passes into one requiring surgical intervention. Here, again, the experience of the individual physician is the determining factor in the balance of judgment.

Fourthly, following the application of anesthesia and asepsis to surgery, in the full flush of an almost new-born art, many operations were designed and carried out for conditions which at one time were considered surgical, but which time and experience has taught us are either not benefited or are even made worse thereby. Among these may be mentioned the various operations for gastric and colonic ptosis. These cases are now wisely being transferred to the medical realm.

With these angles of the subject in mind, and remembering the vast field the topic covers, it must be stated at the outset that the present paper will not include some of the lesions which I regard as strictly surgical as I am not requested to speak of these, and will include others upon which there is as yet no unanimity of opinion. In any event, the space devoted to any one subject must necessarily be but brief. The attitude will be that of surgical aids to conditions where the medical treatment is either unavailing or where the state of mind of the patient (albeit sometimes of his harassed physician) requires some operative procedure.

In order to give some semblance of orderly consideration, I propose to begin with the gastrointestinal tract and follow it in its sufferings.

[1]Read before the North End Medical Association of Philadelphia.

First, then, acute gastritis. It is obvious that there is no surgical treatment for this condition, although very often the surgeon evacuates an appendiceal abscess in a patient previously treated for acute gastritis. As the stomach is the megaphone, or, in modern simile, the loudspeaker for the other abdominal organs, all such outlying districts must be carefully examined and watched before a diagnosis of acute gastritis is made. First, last and always we must think of the appendix.

Chronic gastritis, so-called dyspepsias, and the alterations of gastric secretion may be conveniently grouped together for our purpose in order again to emphasize the necessity for careful examination of other organs, such as the ubiquitous appendix, the gall-bladder, the stomach, for ulcer, carcinoma, etc., which may be masquerading under these symptoms. At the risk of tiresome repetition, let me call your attention to the fact that the subjective symptoms of chronic appendicitis are often confined to the epigastrium alone.

Pyloric obstruction, whether from the cicatrix of an ulcer, from neoplasm, or from extra-pyloric adhesions, such as disease of the gall-bladder, requires surgical treatment as soon as the symptoms of obstruction appear. In this category would also fall congenital pyloric stenosis, the treatment of which I am dogmatic enough to say is always surgical.

Peptic ulcer. Here we come to a "No-man's Land" between the internist and the surgeon, piled deep with the verbal wreckage of years of controversy. From my experience I would say that if, following four months treatment for acute peptic ulcer, the symptoms do not subside or if they return after a temporary lull, operation should be performed. The dangers of hemorrhage, perforation and carcinomatous change much overbalance the operative morbidity and mortality. For a workman with a family to support, the loss of time necessary for a thorough course of treatment for ulcer symptoms is a serious factor. On the other hand, the surgeon so frequently sees pathological lesions in a gall-bladder or a high-lying appendix which have caused an almost typical symptom-complex of peptic ulcer, and which have subjected its owner to one or more courses of vigorous dieting and medication at the hands of the best internists, based upon *x*-ray diagnosis by a most expert and painstaking roentgenologist, that his (the surgeon's) reservation as to diagnosis and his advice for an exploratory laparotomy are more than justified. That the possibility of carcinomatous change in an old ulcer is not by any means fanciful is sustained by figures given us by Dr. Stanley P. Reimann of the Lankenau Clinic, who finds this change in about forty per cent of operative specimens, and the Mayo figures of eighty per cent of gastric carcinomas showing old ulcers.

Gastric tumors are strictly surgical, the results in the case of malignancy being in direct proportion to the age of the neoplasm at operation. Carcinoma of the stomach should be suspected and laparotomy performed if indefinite gastric symptoms continue beyond four weeks after the institution of vigorous treatment.

Among the medical diseases of the intestines requiring surgical aid may be mentioned the perforation of a typhoid ulcer. One of the greatest monuments to preventive medicine is the rapidly diminishing incidence of typhoid fever. As a result the necessity for surgical closure of typhoid perforations is rapidly becoming a rarity.

Tuberculous ulcer of the intestines usually manifests itself in the form of chronic intestinal obstruction, and as such the condition is entirely surgical in this stage.

Acute appendicitis is now generally conceded to be the exclusive domain of the surgeon except in the case of some members of the profession who prefer to temporize and gamble with fate, the life of the patient being the pawn of the game. There is no medical treatment for acute appendicitis—it is either surgery or fate.

Chronic appendicitis is rapidly falling into the same category. Likewise, there is

no medical treatment for chronic appendicitis. The present wide-spread discussion involving this topic is not against the propriety of appendectomy for chronic appendicitis, but deals with those cases in which a so-called normal appendix is removed. Anent this topic, among the many thousands I have removed, I have never yet seen a normal appendix. After microscopical examination, Dr. Reimann confirms this statement.

Colitis is, in my opinion, strictly a medical condition, with the rare exception perhaps of the advanced ulcerative type. A confusing point in the treatment of this condition is to decide to what extent slight tenderness in the lower right quadrant of the abdomen, in the presence of suspicions of colitis, is due to involvement of the appendix and what should be the treatment. Here, again, the surgeon and the internist are approaching accord, as is evidenced by an article by an internist, Dr. I. Boas, appearing recently, in which he says: "In adults in whom the differential diagnosis between appendico-typhlitis or appendiculocolitis and appendicitis is impossible . . . we are not masters of the situation. Only after the appendix is removed do we again stand on firm soil therapeutically." In my opinion, the uncertainty of the diagnosis in such a condition, in the face of present-day methods, requires the removal of the appendix followed by vigorous medical treatment of the diseased colon.

Ptosis of the stomach and colon, as has been previously stated, is not the exclusive preserve of the internist. The various methods of surgical fixation have been discarded. General fattening and toning up of the individual, with proper mechanical support as indicated, form the present-day basis of treatment.

Acute inflammations of the gall-bladder with their complications are strictly surgical in treatment.

Chronic inflammation of the gall-bladder and its passages, with or without the presence of gall-stones, constitutes another inky battle-field. It has for many years been my opinion that the infections of this region are most commonly due to extensions from a focus of infection elsewhere in the abdomen, most often a chronically diseased appendix. The infection spreads by way of the lymphatics, although it may come by way of the portal vein, the hepatic artery, or the hepatic vein (hematogenous route), or by direct extension from the duodenum along the common duct. Once a diagnosis of infection of the gall-bladder or of the bile ducts is established, surgical intervention is indicated before the mischief extends further into the liver and results in hepatitis, or into the pancreas and threatens its vital function. In every case of cholecystitis there can be shown microscopically a hepatitis in the adjacent parts of the liver.

Acute suppurative hepatitis. This serious disease usually springs from infection carried to the liver either by the portal vein, hepatic artery, or by lymphatics, or from ulceration of the stomach, duodenum, appendix, septic wounds, empyema, otitis media, typhoid fever, diseases of the gall-bladder, or infective cholangitis. It may also take the form of small multiple abscesses scattered throughout the liver, or else one large abscess known as tropical abscess. This manifests itself as a large swelling associated with tenderness and sometimes chills and fever. It is in the large abscess that surgical drainage is indicated, thereby reducing the mortality from eighty per cent to about twenty-five per cent.

Biliary cirrhosis. That this form of hepatic disease has an infectious basis is, in the light of present knowledge, undoubted. The best results are obtained by biliary drainage and splenectomy. Not a few pathologists are of the opinion that in this disease the primary focus is in the spleen. Early operation before structural changes in the liver have advanced too far, offers the most promising results.

Portal cirrhosis or Laennec's cirrhosis. The treatment of this form of disease of the liver is strictly medical. There is no proved basis for an infectious theory, and biliary drainage is of no avail. As

a palliative measure, when ascites intervenes, some form of the Talma-Morrison operation is sometimes performed to provide added collateral venous circulation for the liver. This, however, has no influence on the course of the disease or its termination.

Jaundice. Until many of the still obscure points of bile-pigment metabolism are solved, our classification of jaundice must be somewhat arbitrary. Much work is being done in this field, and only recently an important contribution has been offered establishing the possible extra-hepatic origin of bilirubin. This fact has some bearing on the hematogenous jaundices. The present discussion can be only fragmentary and sketchy, in inverse ratio to the importance of this subject.

Jaundice may be classified as follows:

1. Obstructive or hepatogenous jaundice. This results from obstruction of the common bile duct by gall-stones, parasites, pressure by tumors arising within or without the ducts; by obstruction of the bile ducts and capillaries of the liver, as in cirrhosis, malignancy, abscess, syphilis of the liver, or by infectious or catarrhal changes in the ducts. This is the most common form of jaundice and requires surgical intervention, first to establish the diagnosis, and secondly, to relieve the obstruction if possible. Of course, where the obstruction is above the hepatic duct, no aid can be given. However, the termination of the case being certain and not remote under any other treatment, the patient is entitled to the benefit of possible aid. Every experienced surgeon has seen cases of painless jaundice, apparently malignant and hopeless, which have proved to be gall-stones in the common duct or a chronic pancreatitis, and where recovery has ensued even after the pessimistic preoperative diagnosis. Of course, careful and exhaustive preliminary study must be carried out in the attempt to differentiate and exclude the second class of jaundice, which is the

2. Hematogenous jaundice. Here there is blood destruction and bile formation over and above what the liver excretes. There is no suppression of liver function, and the bile salts and other excretory matters are excreted normally, except that the bile is thick and viscid with its overload of débris. This form of jaundice arises from blood changes and is seen in chronic hemolytic jaundice, otherwise known as chronic familial jaundice, although there is also an acquired form; it is also seen in pernicious anemia, some leukemias, icterus neonatorum, and paroxysmal hemoglobinuria; it occurs also in splenic alterations, such as in Banti's disease and biliary cirrhosis; we also find it in general infections, such as septicemia, pneumonia, scarlet fever, typhoid fever; and in some parasitic infections. Where the spleen is at fault, splenectomy offers much in the way of cure.

The third and last division of jaundice is suppression or toxic jaundice. Here there exists more or less complete injury of the liver cells with suppression of liver function both with regard to its bile-excreting power and glycogen storage, and urea and fibrinogen formation. It occurs in acute yellow atrophy, eclampsia, phosphorus, chloroform and allied poisonings, also in yellow fever and epidemic jaundice or Weil's disease. Here surgery has nothing to offer. Recovery or death rests upon the extent of liver devastation and the power of regeneration of the liver cells.

The pancreas. Acute pancreatitis offers hopes for recovery only upon immediate operation. The condition is therefore strictly surgical.

Subacute pancreatitis in the form of localized hemorrhages occurs much oftener than is supposed. I believe that many of the attacks of so-called "acute indigestion" are in reality these localized points of hemorrhage associated with shock and collapse. This is also true of a condition occurring after some infectious diseases, especially mumps; the symptoms consisting of incessant vomiting, with or without severe epigastric pain, coming on from seven to fourteen days after subsidence of the parotid swelling, in the case of mumps. It occurs

in both males and females, but never requires surgical interference and is never followed by chronic pancreatitis or diabetes.

Chronic interlobular pancreatitis, in my opinion, is most often due to the spread of infection along the lymphatics from a pre-existing focus in the abdomen, generally the gall-bladder or the appendix; less often directly from the duodenum, and possibly also hematogenous extension. In the presence of jaundice, operative drainage is imperative in order to prevent fatal complications. However, the best treatment is the prevention of the whole vicious circle by early diagnosis and prompt attention to the first focus of infection.

Chronic interacinar pancreatitis, which is so intimately related to diabetes mellitus, has no surgical treatment.

The spleen. The only cure for that curious condition, wandering spleen, is splenectomy. The dangers of torsion of the long splenic pedicle and of intestinal obstruction by torsion over a loop of bowel are considerations indicating splenectomy. Splenopexy is unsuccessful.

Splenectomy is curative also in cases of chronic hemolytic jaundice, as has been noted already.

In pernicious anemia, splenectomy has resulted in amelioration in some cases with an enlarged spleen and a good blood picture, but it has never produced a cure in these cases.

Among the most striking results in splenic diseases is the cure or arrest of Banti's disease by biliary drainage and splenectomy. Banti's disease is characterized by progressively increasing splenomegaly, with a moderate anemia of the chlorotic type, followed by slight jaundice, although this may be well marked. Late in the disease there is a cirrhosis of the liver of the Laennec type. Early splenectomy is curative, and even late in the disease it arrests the process.

Gaucher's splenomegaly, or so-called primary endothelioma of the spleen, is a rare disease usually affecting several members of a family. It is characterized by a very large spleen, chronicity often of twenty to thirty-five years, absence of ascites or jaundice. There is a slight anemia and, late in the disease, enlargement of the liver. Splenectomy has been performed, but the ultimate results have never been reported and its advisability remains in doubt.

Tuberculosis sometimes appears to affect the spleen almost exclusively, although it is always metastatic from some focus elsewhere. Where this is the case, splenectomy followed by a suitable tuberculous regimen offers the best chances.

The peritoneum. Acute peritonitis is practically always the result of the introduction of bacteria into the cavity by means of perforating wounds of the abdomen or rupture of one of the contained viscera. In women it is often due to infection through the Fallopian tubes. When we consider that the peritoneal surface is nearly equal to that of the skin area of the body, it is more readily understood why the average case of diffuse peritonitis is so fulminating. It is to prevent the ready absorption, after the catastrophe has occurred, that the operation of drainage of the thoracic duct has been devised. The reported results so far have been very encouraging, although not sufficient cases have as yet been reported to justify positive statements as to its effect.

The treatment of acute peritonitis belongs to the surgeon, the decision as to the advisability and the propitious moment for operation being one requiring skill and intimate acquaintance with this serious condition.

Chronic peritonitis in the form of tuberculous involvement is not by any means rare nor is it difficult to diagnose. In most cases, as is well known, simple exploratory laparotomy suffices to arrest the condition as far as the peritoneal phase goes, but it is not a panacea which will miraculously cure tuberculosis of the cecum or of intestinal obstruction from adhesions. These must be dealt with as they are met with at operation.

Embolism and thrombosis of the mesenteric vessels. This disease occurs most commonly in old men, although many cases

have been observed in children. Valvular lesions of the heart favor emboli, while hepatic cirrhosis with portal stasis favors thrombosis. In the young, acute appendicitis and pelvic infections may be the origin of the trouble. The acute case presents agonizing abdominal pain, followed by nausea, faintness, hematemesis, often diarrhea with tarry stools or stools streaked with bright-red blood; collapse, distention, tenderness and rigidity of the abdomen. The diagnosis is difficult, but the condition should be kept in mind in any case of acute abdominal catastrophe. The only hope is resection of the gangrenous bowel. The mortality is high, as may be expected, being about sixty-four per cent in reported cases.

Tabetic crises, cases of abdominal angina, herpes of the abdominal wall, are all medical conditions finding their relation to surgery only in the necessity for their exclusion in any given case.

The Medical Treatment of Surgical Diseases of the Abdomen[1]

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I confess that the title given to Dr. Deaver's paper, "The Surgical Treatment of Medical Diseases of the Abdomen," and my paper, "The Medical Treatment of Surgical Diseases of the Abdomen," led me to believe at first that a joke was being perpetrated on us both. Certainly the titles may be interpreted as being ridiculous, for there cannot be surgical treatment of medical diseases of the abdomen, nor can there be medical treatment of surgical diseases of the abdomen.

As a matter of fact, if we use as titles "The Medical Treatment of Surgical Patients" and the "Surgical Treatment of Medical Patients," this would be better, for after all we treat the patients and not the disease. When a patient develops a condition which demands surgical interference, there is no medical treatment except in the preparation of the patient for the operation and the care of the patient after operation, and I cannot understand how there could be a surgical treatment in a purely medical case, although at times both surgery and medicine must go hand in hand throughout the illness.

Dr. Deaver is correct when he states in his paper that after all the determination as to whether a case is surgical or medical primarily rests with the medical man, because he is the one who says to the family not that surgical interference is essential, but that a surgeon shall be called in consultation in order that the diagnosis of the medical man may be balanced by the opinion of his surgical colleague. Cases can be divided into two great classes in this respect. One class is represented by acute appendicitis, acute cholecystitis, intestinal obstruction, extra-uterine pregnancy, acute pancreatitis, etc. The other class is represented by subacute or chronic conditions in which the need of immediate interference is not so pressing and in which it is quite possible that by rest in bed and suitable non-surgical treatment the dangers and complications of surgical measures can be avoided. By such cases I refer to instances in which there have been dyspeptic symptoms which have led to an opinion that there is a stone in the gall-bladder or an ulcer in the stomach or duodenum, or that there is a stone in the kidney. Now, it is quite true from the surgeon's standpoint that chronic dyspepsia is a hall-mark of a gall-bladder or gastro-intestinal lesion, but every medical man knows that amongst a thousand patients

[1]Read before the North End Medical Association of Philadelphia.

who have dyspeptic symptoms there is a relatively small percentage that have organic lesions that require surgery.

A greater responsibility which rests upon the physician in his relation to the surgeon exists in this fact, namely, that the patient regards his physician as his guide, and if the physician strongly advises operation he takes on a degree of responsibility which is continuous in many cases for many years, whereas the surgeon, if he operates, takes on only the responsibility at the time of the operation and during the relatively few days of convalescence surgically speaking.

The patient says to the physician: "Dr. Hare, if I take the surgeon's advice and your advice to be operated on, will I be cured?" If he is given an affirmative answer in not a few cases, in future months or years he is inclined to believe with Carlyle that "all men are liars." The patient thinks, "If I submit to this procedure," which, to the patient, we must always remember, marks a crisis in his life, "I will be well." "Therefore, when I place in the credit column my perfect result it more than balances my fear."

Now, however skilful the surgeon may be, every medical man knows that for a long time after operation an abdominal scar may be hypersensitive. He also knows that postoperative adhesions may produce discomforts in the patient that are greater than his original sufferings, the more so as the shock of the operation and the administration of the anesthetic have put his nervous system in a condition which renders it difficult for him to bear pain or to be in a happy state of mind. No one here who has had a large medical experience has failed to see numerous cases of this character. To illustrate what I mean, I may cite the case of a man of fifty odd, who, having some digestive disturbance, was *x*-rayed, when to the surprise of himself and his physician he was found to have a gall-stone. He got the impression that the gall-stone was the cause of his indigestion. He went to New York, where the surgeon said, "Yes, you have a gall-stone. You ought to have it out." He had it out, but he has never been a well man since, because what may be called a surgical pathological mistake occurred, in that the gall-stone was an innocuous foreign body in his case. It had not produced a cholecystitis nor any evidence of infection, nor had there been attacks of colic. There was no more reason why that man's gall-stone should be taken out than his head should be shaved because it had gray hairs on it. In each instance the gall-stone and the gray hair indicated that he had lived a certain number of years. In this case the cholecystectomy was not compensated for by an adequate or hypertrophied sphincter of Oddi, and the bile, in consequence, drools continually into the small intestine, which is just as abnormal a condition as if the surgeon in an operation on the prostate induced a condition in which the urine continually drooled from a patient.

Now I am well aware that there are certain cases of cholecystectomy in which the sphincter of Oddi is competent and holds back the bile. Furthermore, that in some of these cases the common duct undergoes dilatation and acts as a substitute gall-bladder, but this is not so in all cases, and truly the last state of this man was far worse than the first, and is going to be far worse for his entire life. His medical adviser was wrong, because he led the patient to believe that a gall-stone is a thing which ought to come out even if quiescent. The surgeon was wrong, in that he was willing to remove that gall-stone and do a cholecystectomy presumably to prevent the formation of another gall-stone, or stones, without having any knowledge that the digestive disturbance of the patient was due to the gall-stone. In other words, he operated on a guess, and possibly a suitable diet and suitable medication for the gastro-intestinal catarrh, which undoubtedly was present, might have been adequate to produce a cure, or certainly would not have done any harm. If we medical men are not careful in dealing with these patients, we will find that they go to the operating table comforting themselves with the idea of perfect health, believing that after the wound gets well they will "be dancing and

leaping and praising God" when in reality, if they escape the dangers of postoperative complications, they will be dancing and leaping, but instead of praising God, will be cursing the doctor and surgeon.

There came under my care to-day a woman of thirty-six. At nineteen she had an appendectomy with adhesions to her right ovary, which ovary was taken out. At twenty-three dilatation of the cervix. At thirty-two a supravaginal hysterectomy for fibroid. At thirty-three the gall-bladder drained by operation, and three months later the gall-bladder removed. She now has diastasis of the abdominal muscles, and the wound at the lower margin is not completely healed. She has no appetite, finds it difficult to digest her food, and almost daily vomits bile, which I presume is due to the fact that this fluid is continually pouring into her duodenum and then finding its way back into the stomach. Her condition is truly pitiful, the more so as I do not see how either medicine or surgery can be of any value to her whatever.

There is another aspect as to the medical treatment of surgical cases, and I wish to emphasize that there is more medical treatment for surgical cases needed than there is surgical treatment for medical cases. I repeat that there is no surgical treatment for medical cases. I claim that the average surgeon is far too careless in the preparation of the patient for the operating table. If it be true that one or two infected teeth or infected tonsils can produce one-half the ills of which they are accused, it must also be true that when a local area is devitalized by the trauma of surgery, the pathogenic organisms in those teeth or those tonsils will lodge in the surgical area and do it very much more readily than in a non-traumatized joint, where nevertheless they very commonly raise trouble. Far too little attention is paid by the general surgeon to the state of the tonsils and the state of the teeth. In many instances the mouth of the patient is actually foul, and foul not with the organisms which might be present in a dead body, but with the organisms that can only exist in a living body, and which are readily drawn into the respiratory passages when the glottic opening is no longer an adequate protection against the entrance of pharyngeal liquids and when the delicate tissues of the lungs have their resistance diminished either by the anesthetic itself or by the congestion of the lungs with its disturbed circulation resulting from the mere induction of anesthesia.

Again, there is too little attention paid to the mind and nervous system of the patient before operation. We medical men do not know how much perturbation is produced even by a hypodermic injection. I happened to have under my care a six-foot brawny prize-fighter who has needed some hypodermic injections, and he told me frankly that he would rather have a punch on the nose than be stuck by needle.

The patient is often allowed to have a wakeful night prior to an early morning operation. He often is starved for twelve or eighteen hours before an operation. This may be necessary in certain cases in the sense that no food is given him, but its evil effects can be avoided by seeing that easily assimilated carbohydrates are pushed for two or three days until his storehouse of glycogen is sufficiently filled to carry him along until he can again take food.

Again, the nervous and apprehensive patient is often placed where other patients are making noise, or else wheeled into the operating-room with sterilizing apparatus brightly polished all about him, and as he drifts off under the anesthetic believes that he is going to be run over by a steam calliope surrounded by hooded members of the Ku Klux. Klan represented by the surgeon, his assistants, and the nurses. If he is a ward patient, he is taken out of the ward on the same table and in the same position as he approaches his operation as he has seen other ward patients pass out of the ward when a post-mortem examination is to be made.

A child should regard his nurse as an angel of mercy, but just before he is operated on he finds her to be a dreadful person with a hypodermic needle. The drugs should be given by the mouth.

It is true that surgeons pay more attention to-day to the functions of the kidneys before operation than they used to. In my opinion, they rely too much on what might be called dyestuff diagnosis and should rely more on blood analysis. This part of my remarks dealing with preoperative attention could be prolonged indefinitely. Time does not suffice.

What about postoperative conditions? When I was a young medical man I was fortunate enough to be under the tutelage of a very great surgeon who was so busy that he had little time to look after his patients after operation. His colleague was a relatively poor operator, but had plenty of time to look after his patients after operation, and we used to say that if we needed surgery, we would like A to operate and B to treat us afterwards, and B had patients with better periods of convalescence than A, although B was at times disrespectfully referred to as the "ripper."

Some surgeons become so enamoured of their instruments and so immersed in their technique that they are prone to think that there is no therapeutics except the knife, and the whole patient is the operative field. I have heard at least three well-known surgeons frankly take pride in the statement that they knew nothing about drugs, just as I once heard an eminent pathologist of Harvard University make the same confession. There was no reason why he should have known a good deal about drugs. There is every reason why the surgeon should know a good deal about drugs to be used before his patient is operated upon and afterwards. Some surgeons have an attitude toward postoperative treatement that resembles Osler's joking statement to the effect that his therapy consisted in "Hope and Nux Vomica," and therefore he entirely ignores very many things that will hurry his patient's convalescence and make his path smoother; indeed he often makes it rougher, and this is particularly the case if he leaves the after-treatment to a subordinate who is all too prone to order a Murphy drip as a matter of routine, although the patient may be one of those individuals who almost has a reflex epileptic attack from rectal irritation before the drip has been going long enough to do him any good. I have seen women crying and wringing their hands and screaming that the nozzle of the drip must be taken out because it gave so much rectal spasm and discomfort, and I have heard them told that while the nurse was sorry that they were suffering, that it was "orders" and, therefore, it had to be tolerated, when the damage done to the nervous organization of the patient was far in excess of the advantage to be gained by the problematical absorption of a few grammes of glucose.

Some years ago I was reading a Bostonese paper in which an account was given of the intravenous injection of glucose. I wrote to the author and asked him what sort or brand of glucose he used, and he made the amazing reply that he did not know, because he just ordered "glucose," whereas glucose is just as variable as the coal is to-day. It is anthracite, semibituminous, and bituminous, pure, impure, and very impure, utterly unfit for intravenous injection in some instances and possibly too pure in other instances. Here the pediatrician is ahead of the surgeon, because he recognizes that a perfectly pure maltose or levulose may flood the patient's body too rapidly, whereas if a little dextrin is mixed with it, it slows absorption and storage so that the body can deal with the carbohydrate. So, too, the common delusion still exists that a teaspoonful of sodium chloride to a pint of water makes a physiological salt solution. Depending upon the size of the spoon and how it is piled up, it may be hypertonic, hypotonic or isotonic, and if hypotonic or hypertonic to a sufficient degree, may be practically equivalent to a poison. In the first instance taking salts out of the tissues and in the second case robbing them of fluids.

At the present time much interest is being taken in the subject of pulmonary collapse. Fortunately it is not very common, although many cases of so-called postoperative pneumonia are incorrectly diagnosticated. The

thought has occurred to me that while it may be true, as Jackson and others have pointed out, that the collapse is sometimes due to the plugging of a bronchus with mucus, this is not always due to this cause, as, for example, in the cases so well reported by Sir Rose Bradford of London, in which the collapse followed traumatism of the chest wall. The collapse of the lung must leave a partial vacuum in the pleural cavity. Would it not be well in the presence of such a collapse, if it is recognized early, to make this vacuum more nearly complete by aspiration and so to reëxpand the collapsed lung, the patient at the same time being instructed to rather deeply inhale.

Another point is in regard to the Trendelenburg posture. I am convinced that this often tends to produce pulmonary collapse, particularly if it is maintained for more than a very few minutes. Here again the surgeon is so intent on the operative field that he is apt to forget that throwing the abdominal contents against the diaphragm prevents its free movement and interferes with circulation in the upper abdominal zone and probably in the thorax as well, producing undue congestion in these parts and putting out of commission that most important muscle in respiration, the diaphragm.

To illustrate what I mean as to the effect of displaced abdominal viscera upon respiration and circulation, we have the circulatory state shown in marked cases of enteroptosis, which is, of course, the opposite state from the Trendelenburg posture, and we have an illustration of the effect of malposition of the abdominal contents in the laboratory rabbit, which if held up by the ears, usually struggles violently for a few minutes and then hangs perfectly limp, the lower belly bulging markedly because of the abnormal posture. If at this time the rabbit's retina is examined with the ophthalmoscope, it will be seen to be abnormally pallid, and it would appear that the rabbit becomes still and relaxed because it has come near to fainting.

I have often heard a surgeon say in a reproving way, "If I had seen this case earlier, I could have done something for it." My reply is, I know of some cases where if the surgeon had not seen the patient at all, he would be here to-day.

In one case there was no question whatever that the patient who had an hour-glass stomach would have lived for many months instead of passing away after operation in three days. If the patient is told that he has an hour-glass stomach and that operation is the only thing that will relieve him, he is told the truth in the sense that medical measures can do nothing for an hour-glass stomach, but if he is led to believe that the surgeon is going to be able to correct the deformity without putting him in grave jeopardy, he has not been told all the truth, but only a small percentage of it.

His motto may be: I was well, I wanted to be better; I had surgery, and here I am.

It is a noteworthy fact that physicians and nurses are the people most hesitant to come to operation on themselves, not because they are cowards, but because they know what may happen afterward.

I make a plea for the medical treatment of surgical cases. I state that sometimes there is too much surgical treatment of medical cases. When medical men are so skilful as to know when a case is surgical and when surgeons realize that the operative field is not the whole thing, but that there are fifty-seven other organs to be considered, we will get better results.

There is not time to discuss Dr. Deaver's paper statement by statement. In order to drive home a point he is prone to make dogmatic assertions, as, for example, when he states that tuberculous ulcer of the intestines usually manifests itself in the form of chronic intestinal obstruction. What he means is not *usually*, but *sometimes*, or *rarely*. Of course, he has never seen a normal appendix, because he is too good a surgeon to be misled into operation on one which is normal or to open an abdomen in which there is no real pathology, but I feel sure that not rarely he has gone in with the

idea that an appendix might be the seat of the difficulty and found that the trouble was elsewhere, or at least was the major lesion.

I would not speak so boldly if it were not a fact, which you all understand, that Dr. Deaver and I are warm personal friends, and as a matter of fact are in thorough accord in the vast majority of instances, particularly in reference to the advisability of waiting in cases of appendicitis if there is any evidence of general peritoneal invasion. This is a point which was not recognized for many years, but is becoming more and more emphasized as time goes on.

The Treatment of Menstrual Disorders

BY EMIL NOVAK, M.D., Baltimore, Md.

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The statement that the therapeutic point of view with regard to menstrual disorders has undergone a profound change within the past fifteen or twenty years scarcely needs any elaboration. The chief reason for this is of course the striking advance in our knowledge of the mechanism of normal menstruation. Other factors of importance are the opening up of the great field of endocrinology and the development of our knowledge of gynecological pathology.

Space will scarcely permit of a review of the development of our knowledge of the physiology of menstruation from the early era of pure speculation and superstition to the much more scientifically-grounded, though admittedly still imperfect, conceptions of the present day. For such a historical survey I would refer the reader to a previous paper.[1] The foundation of our modern conception of the process is the accepted fact that menstruation is produced by an internal secretion of the ovary, although this is closely interrelated with other links in the endocrine chain. With certain of the other ductless glands the relationship of the ovary is extremely intimate, as with the hypophysis, the suprarenals, and the thyroid. With others, the interrelationship is much less important, or perhaps not demonstrable at all.

There has been much discussion as to which element in the ovary is concerned in the cyclical changes of menstruation. The evidence as to the conspicuous importance of the corpus luteum in this connection appears to me quite irrefutable, although it would, on the other hand, be a serious error to look upon it as all-important. There have always been a minority of investigators who have stressed the importance of the maturing Graafian follicle, and the recent investigations of Allen, Doisy and others have done much to strengthen this opinion.

Ovulation is now believed to take place not at the menstrual periods, but ordinarily at about the thirteenth or fourteenth day of the cycle. The first day of menstruation is of course taken as the first day of the twenty-eight-day cycle. The discharged ovum then begins its journey along the Fallopian tube, while the endometrium begins to make preparations for its reception by entering on a slow day-to-day hypertrophic change which is probably due to the internal secretion of growing follicles. The follicle from which the ovum was discharged does not undergo rapid shrinkage and disappearance, as was formerly believed, but enters upon a striking developmental change which reaches full bloom a number of days before the onset of the next period. At this time, and unquestionably because of the endocrine function of the now fully developed corpus, there is a striking impetus to the hypertrophic changes in the endometrium (premenstrual hypertrophy), so that it presents a picture not unlike that of young decidua. If the ovum thrown off at the

preceding ovulation has been fertilized, this hypertrophic endometrium remains, and by an insensible transition becomes decidua in actual fact.

If, on the other hand, the ovum does not meet a spermatozoan, it dies after what is apparently a fairly fixed life span, presumably about two weeks. The death of the ovum renders useless the elaborate preparatory changes in the endometrium, and the latter dismantles itself. This catabolic dismantling process, with a throwing off of considerable endemetrial tissue, and the accompaniment of hemorrhagic discharge, constitutes what we call menstruation. It will thus be seen that the corpus luteum does not cause the bleeding of menstruation, and, indeed, that the latter occurs in spite of the corpus. And yet the latter is essential to its occurrence, as it is responsible for the preliminary hypertrophic stage without which the destructive menstrual phase would be impossible. There are of course a number of other important factors, such as a biological change in the endometrium, an increased permeability in the blood-vessel walls, etc. These, however, are much less definitely understood, and hence need not be dilated upon in this extremely summarizing outline, which has been presented simply as a basis for the discussion of one or two points in the mechanism and treatment of the three chief menstrual disorders, viz., amenorrhea, dysmenorrhea, and abnormal uterine bleeding, embracing both menorrhagia and metrorrhagia.

It is not the object of this paper to discuss categorically the various causes of these symptoms. These can be found enumerated in any of the standard text-books. It is hoped, merely, to call attention to a few points which indicate how our newer knowledge of the physiology of menstruation is reflected in the plan of management of these abnormalities of the function.

Amenorrhea.—The cause of pathological amenorrhea is commonly of constitutional nature, and only occasionally local. The reverse is true of excessive menstruation, in which the cause is much more frequently found in the pelvic organs themselves than in a systemic disturbance. There are just one or two aspects of the subject which I should like to touch upon. In the first place, an extremely important, because extremely frequent, form of amenorrhea is of undoubted endocrine causation. I refer to the type seen so frequently in association with obesity, the latter being commonly of rather characteristic distribution, with heavy deposits about the shoulders, busts, hips, and buttocks, while the waist is often comparatively slender. The increase in weight is often extremely striking. I have seen patients gain as much as ninety pounds within a year or two. Menstruation often disappears completely, though in mild cases it may persist irregularly and scantily.

In these cases of the so-called adiposogenital dystrophy type, the location of the disturbance is believed to be in the hypophysis, though some believe it to be in the immediately adjoining brain areas instead. It can be readily seen how the association of amenorrhea and increased weight may lead to perplexing problems of diagnosis, especially in the differentiation between this condition and pregnancy. Inasmuch as every practitioner must encounter these patients with a fair degree of frequency, the importance of familiarity with the syndrome is obvious. Once recognized, the rational method of therapy is the administration of organ extracts, although unfortunately the results too often are extremely unsatisfactory. Pituitary substance is often employed, either as the whole gland or the extract of the anterior lobe. Logical though this is, my results have been disappointing, no doubt because of the fact that really potent preparations are not as yet available.

The same may be said of ovarian therapy, although here recent attempts at providing lipoid-containing, instead of watery, extracts for intramuscular administration justify some encouragement for the immediate future. There is always the temptation in this, as in so many organotherapeutic indications, to add the inevitable "pinch of thyroid," for here we are dealing with an extract of unquestioned potency, which often gives results, not only in the reduction or

redistribution of the fat, but perhaps even in increasing the regularity and amount of menstruation. In many cases, however, menstruation is not reëstablished, so that the patient undergoes what is practically a premature menopause. This may occur even in very young women, or, indeed, in girls in their teens. The mere absence of menstruation, however, is not in itself inimical to health, and reassurance of the patient on this point is a part of the therapy which should not be overlooked.

Unsatisfactory as organotherapy often is in these cases, it is certainly far more logical and much less harmful than the former method of drug treatment by the administration of so-called emmenagogues, such as manganese and the various vegetable oils. There is not the slightest doubt that the perseverance of laboratory workers in the development of biochemical methods will before very long place in our hands preparations which may be expected to yield far more striking results than those which are now possible.

Dysmenorrhea.—In a previous paper I have reviewed the various theories as to the causation of primary or essential dysmenorrhea.[2] The secondary type is of course associated with definite pelvic disease, such as inflammation or neoplasm; and need not here be considered. The weight of evidence at present indicates that primary dysmenorrhea of the usual type is in some way associated with a mild developmental defect of the pelvic organs, more particularly of the uterus. The obstructive factor, contrary to the old view, is probably of little importance in most cases. It is this variety which so frequently causes severe crampy pains for two or three days before each period, and until the latter is well established, when relief from the pain is often observed. This condition is probably productive, in the aggregate, of far more physical suffering than is associated with either inflammation or neoplastic disease, and yet it has received much less study in this age of spectacular operative gynecology.

The treatment of the attack of menstrual pain itself is perhaps less discouraging than our efforts to prevent recurrence of the attacks. For the former, rest in bed, hot applications, and the administration of analgesic drugs often give considerable relief. In severe forms of the disorder there is a temptation to give morphine, but this, in such a regularly recurring condition, is attended with so much risk of habituation that it should be avoided. Another potent but undesirable antidysmenorrheic drug is alcohol, which is the basis of practically all the proprietary preparations which have been so much in vogue for the treatment of dysmenorrhea. The usual inclusion in these medicaments of such drugs as viburnum adds nothing to their therapeutic efficacy, for they possess no worth-while pharmacodynamic effect along this line. The introduction of benzyl benzoate a few years ago gave promise of better results, but in my hands this drug has been a rather dismal failure in the treatment of dysmenorrhea. Certainly the results have not been comparable with those obtained by the administration of atropine, to the point of saturation, beginning several days before the expected date of menstruation. While not infallible, it is not infrequent after this treatment to have patients state that for the first time in years menstruation has been associated with little or no pain. In at least some of the cases in which this drug fails to help, it is quite certain that a definite anatomic lesion, such as a small interstitial or submucous myoma, has been overlooked.

Permanent relief from recurrent attacks of this form of dysmenorrhea commonly follows the first childbirth, although, on the other hand, sterility is not infrequent in cases in which the uterine underdevelopment is quite marked. Since genital hypoplasia, in at least a mild degree, is so frequently encountered in these cases, and since such defective local development in women who otherwise are entirely normal is presumably of endocrine origin, it is not surprising that organotherapy has often been resorted to. Pituitary, ovarian, or thyroid extracts have been given in various combinations, but, in my own experience and also in the experience of most other observ-

ers, the results have been negligible. Dilatation of the cervix is sooner or later resorted to in most of the severe cases. This operation was originally recommended by Mackintosh, as far back as 1832, because of the then accepted theory that the dysmenorrhea is due to a mechanical obstruction in the cervical canal. Although this theory has been abandoned as applying to any but exceptional cases, the operation is still widely performed for the condition, and not infrequently gives good results. Sometimes the relief is only temporary, so that it is perhaps necessary to repeat the dilatation at intervals. In other cases no relief whatever is obtained.

There has been considerable discussion as to the value and the dangers of stem pessaries following simple dilatation. They are believed by those advocating their use not only to maintain the dilatation for a considerable time, but also, and especially, to develop the uterine musculature by exciting contractions through the irritation of their presence.

The use of stem pessaries is, however, associated with a real danger of infection. Most frequently this takes the form of a chronic endocervicitis, with troublesome leucorrhea, but in not a few cases their use has been followed by much more serious results, such as pelvic cellulitis or salpingitis. For this reason stem pessaries should be rarely if ever employed.

Uterine Hemorrhage.—As already stated, most of the numerous possible causes of abnormal uterine hemorrhage are located in the pelvic organs themselves. Chief among these pelvic lesions are neoplasms and inflammatory disease. The treatment of such hemorrhage is of course directed to the removal of the cause, whatever it may happen to be. The only type of uterine bleeding which will be discussed in this paper is that observed in the entire absence of demonstrable lesions in the pelvic organs. Such "functional" bleeding may be seen at any age during menstrual life, but is most common at or near the menopausal epoch. It is then commonly spoken of as functional climacteric hemorrhage. Its great importance at this period of life lies in the fact that it must be distinguished from cancer of the uterus, which likewise manifests itself by abnormal bleeding.

This form of bleeding may also be noted in girls at or near the age of puberty ("functional hemorrhage of puberty"), and in spite of the youth of such patients it may become alarming in degree. Most characteristically it occurs in the form of menorrhagia rather than metrorrhagia, though the the latter may also be seen. The endometrium of these patients, regardless of the age, almost invariably presents a very characteristic histological picture designated as hyperplasia. This has been discussed fully in previous papers.[3, 4] It is a relatively common and very important lesion, which is still unrecognized in many gynecological clinics and laboratories. It is of undoubted endocrine origin, as suggested by the fact that it occurs only during the age of ovarian functional activity, that it can be invariably checked by removal of the ovaries or radiotherapy, and that it so often recurs after curettage.

As the treatment of this condition has also been fully considered in the above quoted papers, I shall here present it in only the barest outline. Mild cases may tend toward spontaneous correction, ostensibly because the disordered endocrine balance spontaneously adjusts itself. In the cases where medical aid is sought, diagnostic curettage is clearly indicated and, besides enabling one to make the microscopic diagnosis, will in a considerable number of cases be followed by permanent cessation of the bleeding. In a large proportion, on the other hand, bleeding recurs sooner or later, so that further treatment is necessary.

Organotherapy may be tried, and is occasionally successful. The nature of the endocrinopathy is apparently not always the same, so that in some cases thyroid, in others the intramuscular injection of lipoid-containing corpus luteum extract, in still others the daily injection of posterior pituitary extract, is beneficial. The corpus luteum extract is perhaps the most rational, because absence of corpora lutea in the

ovaries appears to be characteristically associated with the form of bleeding. My own best results have seemed to follow the daily use of pituitary extract. How much of the benefit has come from a specific endocrine effect of the pituitary substance, and how much is due to the increased contraction of the uterine musculature by the pituitary extract, it is of course difficult to state.

In women at or near the menopausal age who suffer with persistent functional bleeding the indication is clear for radiotherapy, which after perhaps a single period of rather free bleeding brings on a complete cessation of the function. In young women much smaller and more cautious dosage is necessary to avoid permanent amenorrhea and sterility, and not a few gynecologists would prefer to avoid radium altogether, and to try to check the bleeding by other measures, such as repetition of the curettage. Each case should be judged individually, and the patient or her family should be taken into our confidence.

Finally, when for any reason radiotherapy is unavailable, or when there is some other indication for laparotomy, the bleeding can of course be checked by supravaginal hysterectomy.

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Fat From the Surgeon's Standpoint

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AND

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By the word fat as used in this article is meant adipose tissue; without reference to those lipoids which form an essential part of all living cells.

Fat is a conserver of heat, a source of energy, a protector to the structures it covers or surrounds, and, incidentally, an obscurer of unsightly angles.

When taken with food it is saponified, synthetized, and delivered to the blood mainly by the thoracic duct, from which it is labilized. That which is not promptly burned in part or whole is stored in cells whose protoplasm and nucleus are crowded toward the periphery as the fat accumulates. These cells, each having its capillary blood-vessel, are gathered into lobules held together by connecting tissue.

The relation of the pancreas to fat has to do not only with its digestion, but indirectly, through the islands of Langerhans, with the utilization and storage of fat in the body.

A carbohydrate fire is necessary for the complete combustion of fat to water and carbon dioxide. When there is disturbance of carbohydrate metabolism, as in diabetes, fat is not completely burned and the toxic intermediate products, the ketone bodies, accumulate.

Diabetes has a predilection for the overfat individual and causes him to lose weight rapidly. *Per contra,* if pancreatic insufficiency be adequately controlled by the administration of insulin there may be, with returning appetite and free food ingestion, a rapid accumulation of storage fat.

In case of thyroid deficiency there is ex-

cessive storage of fat the result of retarded metabolism, associated with an intercellular deposit of mucoid material; a combination that helps to form the picture of myxedema.

Adipose tissue is especially vulnerable to continued pressure or strangulation because

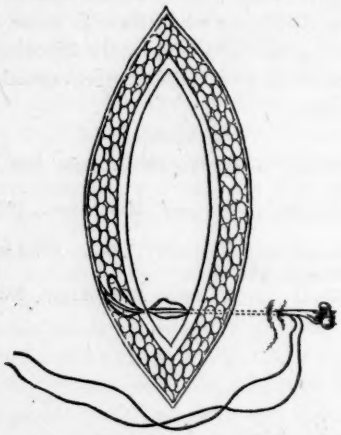

Fig. 1.—Reverdin needle carrying double thread passed through skin, fat and deep fascia about one inch from wound margin and through the fascial edge of the opposite side.

thereby its capillary circulation, meager in total volume, is readily made inadequate.

Added pressure on the millions of capillaries, as the fat cells become bloated, and the mechanical interference with free blood circulation in the larger vessels, particularly in those of the mesentery, are causes of shortness of breath, and cardiovascular degeneration so common in the overfat; more adequate causes than the added strain of constantly carrying a heavy weight.

Both in quantity and quality fat is largely dependent upon diet, thus explaining variants seen by the surgeon.

Fat, when redundant, is from the surgeon's standpoint an unmitigated curse; obscuring his field, retarding his manipulations, weakening his sutures, and, unless neatly apposed, delaying healing. It is an important factor in surgical mortality.

Against obscuring his field and interfering with his manipulations the surgeons's defense lies in generous incisions and well-planned retraction. Against the failure of fat-laden tissue to hold sutures without cutting he may protect his patient by so placing his thread that there may be an elastic yielding and recovery to changing tension. Against delayed healing he must insure close non-strangulating apposition of fat surfaces, and the abolition of catgut, particularly of knots, in this tissue. Bland-Sutton says: "Catgut prepared from the small intestine of sheep is, with many surgeons, a favorite material for ligatures and sutures. Its popularity is mainly due to the advocacy of Lord Lister. Catgut is a treacherous material, difficult to sterilize, and if thoroughly tanned to insure freedom from microörganisms it is as resistant as string. For closing the muscular and fascial layers of an abdominal incision it is especially dangerous. Many cases of wound-burst, postoperative peritonitis, tetanus, and gas gangrene have been reported from its use."

The normal infant is fat in so far as his subcutaneous tissues are concerned, but he has a thin, feathery omentum. The normal youth and adult is lean, not lanky. The normal middle-aged and elderly is fat in regard to his paniculus and his omentum. There are standards of weight and height,

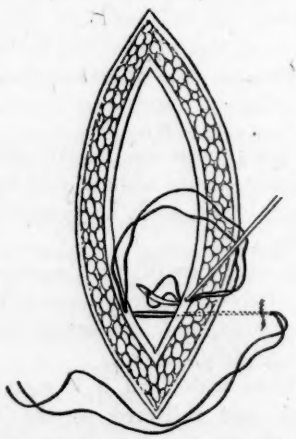

Fig. 2.—After disengaging the thread and withdrawing the needle the thread is again taken up and the needle passed through the fascial edge of the first side.

with allowable variants, which recognize these facts.

Overdeposit of fat might imply either an oversupply of raw material or deficient oxidation. It is usually due to overeating and under-exercise. Occasionally it is incident

to disturbed endocrine function and perverted metabolism. "One needs functioning islands of Langerhans to put on fat."

With few exceptions excess of fat implies increased vulnerability to strain, and in itself adds to the risk of surgical procedure.

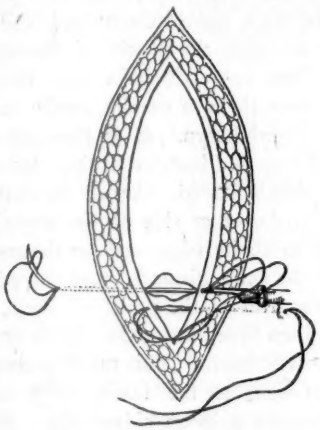

FIG. 3.—The needle passes beneath then through the fascia and fat, to emerge through the skin of the opposite side about one inch from the wound margin.

Since shortness of breath, high blood-pressure, and cardiovascular degeneration are, in part, incident to the mechanical interference with circulation brought about by this accumulation, when time allows it has been the custom to reduce an overweight surgical patient to something near standard—by diet, by exercise, by elimination, and, at times, by the administration of thyroid.

A young or middle-aged adult, fat because of indolence and gorging, if his organs be healthy, may be reduced, with profit to himself, added vitality, and increased length of life. A similar but modified treatment applied to the elderly may at times be happy in its results. It usually is not so; as the weight is reduced, so is the vitality. In infants and young children a dropping or a long stationary weight is a sign of danger.

The guarded use of thyroid is particularly indicated in that form of dense fat which blurs the outlines of a middle-aged normally slender woman, giving her thick ankles, heavy arms, broad hips, and a formless neck.

The fat omentum and mesentery of middle age is an underlying cause for constipation and direct inguinal hernia. Muscles and fascia yield to the overfull belly, causing a conformation which suggests the presence of a subperitoneal football above the pubis. The weight of the viscera is thus directed downward and forward rather than into the pelvis, causes a bulging at points of greatest weakness, and hence hernia, difficult of radical cure; not subject to strangulation, since it is pouched rather than sacculated. Such hernias in their early stages are readily retained by an elastic belt, held in place, if needful, by a perineal band.

The surgeon has found that he may successfully fill defects with fat transplants and with apparently lasting effect. He has not been equally successful in using such transplants as a means of preventing intra-abdominal adhesions.

In operating upon a grossly fat person the surgeon must secure visibility by a free incision, nor is there objection to this since Carrel has shown that the rate of cicatriza-

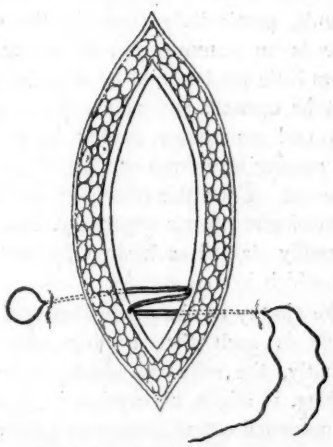

FIG. 4.—The suture is completed by disengaging the thread and withdrawing the needle. Note that the thread has a double grip on the fascia of each side.

tion is distinctly more rapid in large wounds than it is in small ones. This fat tissue, which appears on section almost avascular, is abundantly supplied with capillaries, which should be carefully protected from trauma since, because of the pressure ex-

erted on these vessels by the bloated fat cells, circulation is not active, nor is the vitality large.

It is a common experience in practically all hospitals where the healing of wounds is carefully viséed and the results accurately reported, that following the closure of

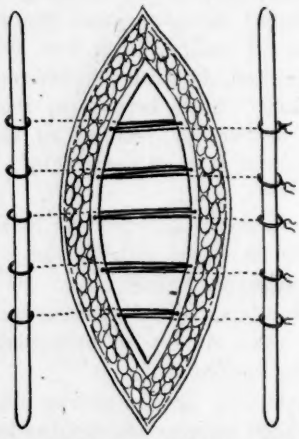

FIG. 5.—All sutures in place. A bar passed through loops on one side and the loose ends of opposite side ready to be pulled taut and tied over a second bar.

wounds, particularly those in the overfat, there is an accumulation of serum which shows little tendency to be absorbed, which must be opened, and which discharges for days and sometimes weeks; in the latter case ceasing when one or more catgut knots come out. Upon this discharge, at first, the bacteriologist reports negatively. The wound is usually classed as healing by first intention, which it does not do.

The vitality of the peritoneum and of the muscle is such that healing takes place promptly, the effusion, unless it be from bleeding, is slight, absorption is rapid, and thin untanned catgut sutures and their knots are cared for—conditions quite other than those obtaining in fat.

The avoidance of dead spaces by the rapid, close, complete, continuous, non-strangulating apposition of cut surfaces, and the doing away of catgut in fatty tissues, have been the ends which this study has had in view.

Wound closure in the overfat is most rapidly and efficiently secured by a Reverdin needle, which carries in its point an eye which can be opened or closed by handle mechanism. A double thread is entered at a distance at least the thickness of the fat layer from the edge of the wound, is carried through the deep fascia over half an inch from its edge, across the wound, and picks up, at its edge, the fascia of the opposite side. The loop of the double thread is freed from the eye of the needle and the latter is withdrawn. It is threaded again with its loop and inserted at the edge of the fascia first pierced, carried beneath the fascia on the other side of the wound half an inch from its edge, and on through the skin at the same distance from the edge of the incision as at the point of entry. The loop is then freed from the needle and the latter is withdrawn. This makes a modified figure-of-eight at the fascial edge with a deeper suture grip on either side. Similar sutures are then applied at appropriate intervals, leaving, when they are all placed, a series of loops on one side of the wound, a series of double threads on the other. Through these loops is passed a cylinder of lead something smaller than a lead-pencil. The loops are drawn down on this

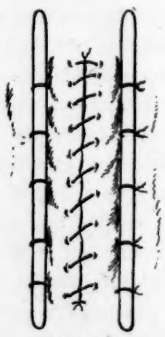

FIG. 6.—Closure completed.

cylinder, each being drawn to appropriate tightness as it is secured to a similar cylinder of lead placed on the other side of the wound, and around which the free ends of the double suture are tied. This suture may be applied even more readily by doubling the thread of a fine curved needle

and knotting together the free ends, leaving loops on the side of entry and free ends at the points of skin exit when the needle is cut away.

There is thus provided a broad elastic support. The fat surfaces are crowded together without necrosing pressure. The deep fascia is brought in close apposition. There are no knots in the fat tissue. And the skin lies in such loose apposition that there is no tension upon the few threads needful to secure accurate closure, and hence no stitch scars. This broad elastic support yields to change of tension, and prevents tearing out of sutures or devitalization of tissue.

Relation of Internal Secretions and Faulty Metabolism to Mental Perversions[1]

BY BITTLE C. KEISTER, A.M., M.D.

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We are to-day facing many and divers theories on the subject of internal secretions, their effect on metabolism, as well as their relation to certain forms of mental aberration.

We are all more or less familiar with the caprice and peculiar freaks played by some of the ductless glands. Take, if you please, the thyroid, the thymus, the pituitary, the pineal, etc., whose physiological functions and pathogenesis are exciting the liveliest interest throughout the realm of the scientific world. Our foremost scientists are to-day puzzling their brains over these apparently insignificant organs.

The most definite clue to the results of internal secretions has been obtained with the thyroids. Recent experimental work on this gland makes necessary to distinguish between the thyroid and the parathyroid tissue. The thyroid proper consists of two oval bodies located on the sides of the trachea at its junction with the larynx. They have no ducts, and are composed of vesicles of various sizes, which are lined by a single layer of cuboidal epithelium, and contain in their interior a material known as colloid. This material is formed within the lining epithelial cells, and when the vesicles rupture it is discharged into the surrounding lymphatics. This colloid material has given rise to much speculative thought, and will be referred to later on in this paper.

We have what is known as a set of accessory thyroids located along the trachea close to the thyroid, and having a like structure to that of the thyroid, no doubt, but their functions are somewhat similar. The parathyroids are quite different in structure, being composed of solid masses of epithelial cells which are not arranged in vesicles, and contain no colloid material. It has been demonstrated that when the parathyroids alone are removed the animal dies quickly with acute symptoms, muscular convulsions, tetany, etc.; while if the thyroids alone are removed the animal may survive for a long time, but develops a condition of malnutrition, a slowly increasing cachexia, which may later assume a condition resembling myxedema in man (Hewitt).

We find after a cursory study of these glands that quite an array of peculiar symptoms arise from any form of traumatism or disease which might cause hypofunction or stagnation of their secretion. The mental forces become weakened and inactive, the skin becomes thick and immobile, owing to a collection of a mucin-like material in the corium, the connective tissue fibrils thicken, and the hair falls out. Weakness

[1]Read before the Section of Internal Medicine of the District of Columbia Medical Society, Washington, D. C.

of the muscles and disturbance of sensation are associated with a general loss of intelligence.

While these and many other pathological symptoms and conditions are the result of any serious impairment of the thyroids, causing a loss of function, we have on the other hand from hyperfunction of the thyroid such a condition as exophthalmic goitre (Basedow's disease), with all the horrible symptoms and suffering that usually accompany that disease, such as tachycardia, syncope, asphyxia and asthmatic breathing from excessive pressure, etc. In discussing the subject of internal secretions, we do not confine our argument simply to the ductless glands, but include the pancreas, ovaries, and other internal secreting glands.

The thymus gland, about which there has been much speculation of late, belongs to the ductless class, and its physiological function is yet quite obscure. Formerly this gland was supposed to reach its full development at birth, and subsequently to atrophy, being replaced by a growth of lymphoid tissue; but of late this belief has been abandoned, and many observers have learned that it continues to grow, and that true thymus tissue may persist through life. Its proximity to the thyroids and parathyroids and its similarity in origin would indicate, like them, that it might have some important specific influence upon metabolism. There seems to be some reciprocal relation between this gland and the reproductive glands. We find that when this gland is removed it hastens the development of the testes, and when the testes are removed the thymus becomes slightly enlarged for a time prior to a retarded atrophy (Henderson). There is no doubt in my mind but this same rule and theory hold good in females under similar conditions. And if we will read between the lines and take the time to consider, we may be able to account for much of the peculiar phenomena that follow the *spaying* of our women by "unbaked" gynecologists.

It is a well-known fact among writers on the subject of internal secretions that the ovaries play an important part in the nutrition of both body and mind. In gynecological practice it is often observed that complete removal of the ovaries, followed by the usual premature menopause, is followed by many distressing and peculiar symptoms, both mental and physical.

There are cases whose mental condition becomes so serious that they are fit subjects for an insane asylum.

It was the writer's unfortunate privilege some years ago to attend a number of this class of mutilated patients who had undergone complete ovariotomy. All honor to our modern gynecologists for their *conservatism* in the matter of not removing *in toto* these important glands from our young and middle-aged adult females!

One of the class of these unfortunate patients above referred to, attended by the writer, was a young refined, highly cultured lady of twenty-six, who had been for some time previous quite nervous, bordering on hysteria. Acting on the advice of relatives, she was induced to go to her young uncle's sanatorium in a distant city for treatment, and was operated on for supposed cystic ovaries and hysteroepilepsy.

After a few months' interval following the operation, she began to run down both physically and mentally. At regular monthly intervals she had attacks of hallucination or cyclic insanity preceded by a state of moroseness. At other times her mind would appear almost normal, but lasting only a short while, when she would gradually revert to the abnormal. This patient was under my observation at intervals for several months. She seemed to find temporary relief in coming to my office to take electricity and vibratory massage at irregular intervals, administered by a trained nurse under my careful supervision. If I had been accessible to some reliable manufacturer of ovarian extract, I should have administered a thorough course of it aided by other constructive treatment.

To keep this young lady out of the lunatic asylum and save her family from remorse, I sent her to a neurological specialist's sanatorium, where she remained only

a few weeks prior to being sent back home to die.

Being absent from the city when she returned, I failed to see her, but was informed that her physician diagnosed her last illness as cerebrospinal meningitis.

This, in my judgment, was the closing scene of a typical case of abnormal internal secretions, complicated by autointoxication, superinduced by the complete extirpation of both ovaries of this young woman. In older literature it was affirmed that not only the entire nature of woman, but her character as well, depended on the reproductive organs. Heimont said: "Prompter solum *uterum* mulier est quod est." Chereau said: "Propter *ovarium* solum mulier est, quad est."

Virchow's statement, that a *woman is a woman simply because of her generative glands,* is familiar to us all. Professor Hochwart, in the *American Journal of the Medical Sciences,* August number, deliberately states that "The peculiarities of woman, both in body and mind, in fact, all the *femininity* which we admire in the true woman, are dependent on the ovary." Every up-to-date physician and neurologist who has had ten years' experience in the practice of medicine is quite familiar with these cases of psychoneurosis among our women of the past decade who have had the hospital craze to be operated on for the prevention of child-bearing. The function and sacred mission of these important glands are being studied with more care and zeal as well as human discretion during the past half decade, and instead of the radical, a more humane operation is being advised by our leading gynecologists, giving more consideration for the after-results.

These psychoses are well known to the careful observer from early puberty to the menopause in a very large percentage of our modern women, who may be apparently healthy in all other respects.

Recent investigations have shown that the menstrual life of women is not a suddenly appearing or disappearing event. On the contrary, the phenomena seem to be a continuous wave-like condition, which is not found prior to the beginning nor after the close of menstruation, either in early youth or old age. Much of the variability of mood and disposition may be explained in this, the often inexplainable vacillating temperament in the sexually mature woman.

The question of the not infrequent tendency to insanity or mental aberration during menstruation has been likewise discussed by some of our ablest writers. Suicides have been quite frequent at these times. A. Pilz found intramenstrual changes of the generative organs in more than one-third of female suicides.

Among fifty-six shoplifters, LeGrand du Soulle found that thirty-five were "unwell" at the time of the crime. Icord, who has written quite extensively on the subject of internal secretions, observes that in perusing the diary of a young girl it does not require much perspicacity to discover the pages which were written during menstruation. We observe these psychic disturbances at the "climacterium," which is considered by many writers as the most dangerous and critical age of woman. At the time when menstruation begins to be irregular, sometimes even months or a year before, women fall into a strange state of unrest, sometimes accompanied by sexual overexcitability, deep depressions, a tendency to outbreaks of weeping, periods of irritability, psychic vacillations and decrease of intelligence, evil forebodings, etc. These are some of the well-known conditions in a large percentage of women during this critical time. In some cases it reaches a very high degree of psychosis, as is shown in the following case that came under the writer's observation: A lady of forty-six years, whose family history was negative so far as I could ascertain. Her peculiarities in temperament and disposition were such that her family life was anything but pleasant. Her husband, who was a railroad man, was living apart from her; her two married sons could not tolerate living under the same roof with her; hence we can only surmise the kind of life she was living. After the first day or so of her entrance to my private sanatorium I made several very

thorough examinations and found quite an array of abnormal conditions both physical and mental. Among the physical my attention was first drawn to her enlarged thyroids and slightly protruded eyeballs (exophthalmos), fast and nervous heart sounds, marked tenderness over both ovaries, high blood-pressure with slight tympanites over lower part of abdomen; speculum examination showed a double laceration of cervix, and endometritis with catarrhal discharge, clitoris double the normal size; urinary analysis revealed albumin and hyaline casts with specific gravity 1.010 (24-hour specimen). The mental symptoms at this and subsequent examinations were: Hysteria, melancholia, insomnia, psychic blindness, syncope, nymphomania, etc., etc.

My diagnosis and treatment at the time (several years ago) were both purely symptomatic, but to-day I would diagnose this case as one of simple "abnormal internal secretions, complicated with nephritis and lacerated cervix." We now know how important are the internal secretions of the endocrine glands for the vital activities of both body and mind. The first week's treatment of this patient consisted of absolute quiet in bed under special trained nurse and nervines and special diet; second week, operation for lacerated cervix and curettage under local and H. M. C. anesthesia. Latter part of third, fourth and fifth weeks, administered the dry-hot-air treatment (Sprague method), with massage, and a strict selected cereal and milk diet. At the end of the seventh week the patient was dismissed as partially cured.

This is only one of many similar cases that the general practitioner meets and puzzles his brain over, and then wonders why we know so little when there is so much to learn from science and experience.

Would that our anatomists, physiologists, our chemists and bacteriologists, and all laboratory workers of whatever character, would delve a little deeper into their respective lines of science and bring to the surface the respective functions and physiological relations of these ductless as well as the many other internal secreting glands, with their special bearing on metabolism and mental forces.

We have the pancreas and its allied co-worker the liver, with their peculiar generating and secreting forces producing pathological conditions, such as glycosuria or diabetes mellitus, a disease about which, until of late years, we knew but little. And even at this late date we are still in the great sea of doubt between abnormal internal secretions and faulty metabolism with their respective relation to the islands of Langerhans, in their special production of a hormone known as insulin, as the real etiological factor in this well-known disease. The fell symptom of acidosis or acid intoxication, with an excess of acetone in the blood, in the production of diabetic coma, points very conclusively to the fact that faulty metabolism plays a very distinctive rôle in the etiology and pathology of this disease that is to-day claiming its thousands of victims. All honor to Dr. Banting and his co-workers in the laboratory and clinics for the wonderful discovery and practical application of "insulin" in the treatment of diabetes mellitus!

We may have conditions somewhat akin to the above in certain diseases of the kidney when the functions of that organ become impaired to the extent of producing uremic intoxication with its long train of mental symptoms. When we consider the vast array of psychic symptoms and phenomena produced by faulty metabolism and deranged internal secretions, we naturally become somewhat bewildered in differentiating these conditions from some of the ordinary forms of insanity. No doubt but many a poor devil has been sent to a lunatic asylum on account of some sudden outbreak of anger or other erratic act due to hypofunction or dysfunction of some one or more of the ductless glands, or possibly to derangement of body metabolism.

Since we have discovered that there is direct communication between the sympathetic nervous system and the ductless glands, we can the more readily understand why these organs with their secretions become influenced by mental emotions either of anger or distress. Many cases of

melancholy, hypochondriasis, etc., may be caused by derangement of the internal secretions. We may also have mental perversions, a lack of control of the passions, of onanism and anger. Our paranoiacs with their cunning schemes (the Harry K. Thaw case), our alcoholic and drug fiends, our eccentric, so-called religious fanatics who are suddenly called by a "higher power" to preach some strange emotional doctrine, dogma, or cult. These are only a few of the pathological effects of deranged internal secretions and faulty metabolism on mental depravity. We may have various kinds of faulty metabolism that give rise to the purin bodies, such as uric acid, xanthin, guanin, etc., etc. We also have the toxins that are set free and invade the entire system when these ductless and other internal secreting glands become impaired, causing every imaginable form of mental perversion, such as illusions, hallucinations (Kelly case[1]). The cardinal feature of the pathogenesis of various forms of insanity is involved in this connection, since the foregoing data and illustrations clearly indicate that hypothymia and hypothyroidism may, by inhibiting the efficiency of the defensive functions of the ductless glands in general, entail a pathological toxemia capable of evoking mental disorders.

Hypofunction of any of the ductless glands may give rise to toxemia by simply depriving the system of this supposed regulating or harmonizing hormone whose function is to destroy the toxins. This is especially true of the parathyroids, since we know that tetany is nothing short of a form of toxemia, caused by hypofunction of these glands.

Then, as a result of the deficiency of the nucleins, the catabolic phase of metabolism is also impaired, and toxic wastes accumulating in the blood, including that which circulates in the brain cells, catatonic phenomena are invited. Chemical changes in the cortical cells of a degenerative type many ensue, causing autointoxication. After a study of the fundus of the eye in 109 consecutive cases of this character, H. I. Tyson and L. Pierce Clark deliberately state that the visual syndrome, as observed by them, was "a distinct" contribution to the theory that dementia præcox is an autotoxic disease, and that the poison is primarily vascular, which finally induces neurotic degeneration.

Concerning the genesis of the poison, these authors, with many others, conclude that the syndrome points conclusively to the fact that this toxin is generated in the gastrointestinal tract.

To antagonize this intoxication by any wrong method of treatment, the ductless glands which take part in the defensive functions of the body, the thyroids, the parathyroids and the adrenals become abnormally active in some instances, and incidentally excite the dystrophic brain cells, provoking the catatonic form of disease (Sajous).

Dercum and Ellis, in a post-mortem study of eight patients suffering from dementia præcox, all of whom had succumbed to tuberculosis, found that in seven the thyroid was under weight. The other seven organs showed colloid abnormalities, both in quality and quantity, and four showed retrograde changes in the acinal epithelial cells. The adrenals, on the other hand, showed a marked excess in weight.

It is a well-known fact that 65 per cent of all idiots, before the age of six years, are deprived of the thymus gland (Sajous). It is also a fact that this class is more susceptible to infectious diseases, and about the same percentage succumb to these infections. Many die of tuberculosis in the incipient stage. As previously intimated, when we have a suppression or stagnation of the secretions of any one or all of the ductless glands, we may have a state of degeneracy of both mind and body. We may have amnesia, ranging from the slight

[1]A minister while preparing his Sunday sermon on Saturday night, deliberately left his study, and proceeded to his nearby neighbor's home with an axe and murdered the husband, wife and two daughters, after which he returned to his study, finished his sermon on paper, and preached it the following Sunday morning. This occurred in the city of Des Moines, Iowa, several years ago. This minister, after keeping his act a secret for two years, acknowledged his crime by making the statement before a jury that he was actuated to commit this act by the word of God. This is, I think, a case of deranged internal secretions, with maniac proclivities.

backwardness of the moron or imbecile to profound idiocy, including amaurotic, moral and microcephalic forms. Hebephrenic phenomena of melancholic type incident upon puberty are quite noticeable among school-girls, who rarely pass the intermediate grade of the public high school.

It is not within the scope of this paper to discuss fully the hyperfunction of the glands of internal secretion. When, however, in the presence of toxemia, we have clear evidence of the overactivity of these organs, it is reasonable to conclude that we are dealing with a defensive reaction. If, after a trial of the desiccated thyroids and iodothyrin, we observe an increase of the motor symptoms of catatonia and those peculiar to Graves's disease, such as rapid pulse, muscular tremors, hyperhidrosis, the overactive eye reflexes, the increased muscular excitability, the demographia symptom, the loss of weight, and skin pigmentation, we may reasonably conclude our diagnosis.

The only clear indication for treatment, in my judgment, is a partial thyroidectomy, which has proven quite successful of late. Dr. Fallis treated by this method eight successive cases of "catatonia" that recovered their mental integrity. This treatment, however, applies more particularly to the young rather than the old and long standing cases. In mild cases of dementia præcox we might administer a thorough course of thymus extract aided by lecithin, which is a phosphorous compound, and is indicated in the treatment of the active nervous symptoms of both catatonia and Graves's disease.

Dr. Bayard Holmes added emphasis to the importance of this subject when he wrote: "There is no disease, not even general paresis, that finds the profession in so helpless and pitiable a condition as dementia præcox does." There is no disease that costs the country a larger amount of care and custody than dementia præcox. According to various estimates, it represents about 25 per cent of the total admissions to the various institutions for the care of the insane (Ingham).

In view of these established facts, sanctioned by such men as Sajous, Dercum, Howell, Hochwart, and L. F. Barker, from whose able pens I have learned much and quoted liberally in the preparation of this paper, let us as progressive medical men and humanitarians give the subject of internal secretions more zealous study, that we may use our influence toward the establishment of institutions for the study and treatment of psychiatry and its relation to internal secretions and faulty metabolism. By this lofty endeavor we may relieve the profession of the stigma of permitting 30 per cent of our fellow mortals from being doomed to the asylum for the insane.

More might be said hereof to make a proof,
Yet more to say, were more than is enough.

1315 Fern St. N. W.

Insulin Practically Applied in the Treatment of Diabetes Mellitus.

Goldring in the *Medical Journal and Record* of December 16, 1925, states that from his series it is evident that insulin is merely an aid in the relief of diabetic acidosis and that it is not necessary and may even be harmful in the mildly toxic cases that will respond to dietetic treatment alone. It will also be seen that the dose of insulin, in the great majority of cases, is more or less constant and should never be given haphazardly. The dose should be controlled by a constant diet, a daily urine examination, and occasional blood sugar and carbon dioxide estimations.

Acetone in the urine in the absence of sugar always indicates a deficiency in carbohydrate or an excess of fat in the diet, and can easily be corrected. Sugar in the urine in the absence of acetone indicates an amount of carbohydrate in the diet above the patient's tolerance and can be corrected by giving a small dose of insulin or reducing the daily intake of food. Hyperglycemia with a normal carbon dioxide and a negative urine can be corrected by a dietetic treatment alone. The use of insulin in these cases is dangerous and moreover the dose is very difficult to control.

Editorial

THE IMPORTANCE OF EARLY AND PERSISTENT TREATMENT OF SYPHILIS.

The title of this editorial note may be considered trite, but trite though it be, every physician of large experience nevertheless comes in contact frequently with patients who if they had received early treatment, continued for a sufficient period of time, would have escaped the later and, in some instances, terrible sequences of the infection. Possibly it would be better to put the blame for inadequate treatment upon the patient rather than upon the physician. All too frequently the patient is allowed to get the impression that active treatment for a month or two will be adequate to produce a cure, whereas in a certain proportion of cases, even with our newer remedies, it is not certain that a true cure can always be induced, for while the symptoms may temporarily be in abeyance, twenty years later they may appear again as manifested by lesions in the circulatory or nervous systems.

In a recent paper published by the United States Public Health Service, Wootton and Tarkington once more emphasize this important proposition. After asking the question, "What shall be considered adequate treatment in early syphilis?" they conclude that although several attempts have been made to standardize such treatment, the time has been too short to be able to answer the question positively, and they insist that the first duty of a physician, as soon as a definite diagnosis is reached and before resorting to any treatment, is to impress upon the patient that he must resign himself to observation and treatment for a period of at least five years. In many instances, even amongst intelligent people, this statement is not believed by the patient, and if not believed, and adhered to, in the end he will bitterly regret his unbelief. Particularly should he be informed that while external manifestations of syphilis may not develop, his nervous system, or his circulatory system, may develop death-dealing conditions in such an insidious manner that not until they are beyond control will he think of attempting to arrest them.

The writers that we have quoted speak of 749 cases of neurosyphilis, many of which would now be well, or better than they are, had the above advice been followed, and it is interesting to note that the plan which they follow as soon as the diagnosis is made is to give 12 doses of arsphenamine intravenously and 12 doses of mercury intramuscularly, and when the patient returns from the Hot Springs to his family physician, that person is provided with a statement of the diagnosis and condition of the patient, and is expected to urge upon the individual that treatment will be continued for the full number of years that we have mentioned.

In obtaining the history of patients, Wootton and Tarkington have been impressed with the brevity of treatment they have received. Two courses, or four courses, may have been given, but sometimes these so-called "courses" have consisted of only two doses of arsphenamine and two doses of mercury, or a handful of protiodide pills. Still other patients truthfully state that they have had a course of treatment lasting over two or three years, but it has developed that the doses have been so far apart as to have been almost useless. Indeed, unless very definite evidence can be adduced by the patient that adequate courses of treatment have been given it is probable that his condition may be worse than it would be had he no treatment at all, because had he not had any treatment his external symptoms would have forced him to apply for it, and also because having had inadequate treatment he may have developed a strain of parasites which may be immune to the influence of arsphenamine.

It is, of course, during the first year

that practically continuous treatment should be kept up. During the second and third year longer intervals may be permitted between treatments, and, after this period, even if there are no manifestations of the disease, as indicated by a positive Wassermann test, either of the blood or of the cerebrospinal fluid, it will be safer to give a course of treatments twice a year. Furthermore, these belated courses of treatment should not be any more moderate than those which were first instituted. Too much reliance should not be put on serological tests. The physician should employ such a test as only one of the stones which helps him to build the arch which supports his diagnosis. Where for various reasons laboratory tests cannot be resorted to, the safest thing to do is to persist in treatment so long and so vigorously that the physician will err upon the right side rather than upon the wrong side. In other words, it is better to use an excess of water in extinguishing a fire than to be so moderate in its employment that smoldering embers remain which at some future time may cause disaster.

VENESECTION FOR THE DECOMPENSATED HEART.

As is well pointed out by Gordon in a recent issue of the *American Journal of the Medical Sciences,* there can be little doubt that venesection is not practiced at this time with the frequency which it deserves. It is scarcely credible that our forebears, who undoubtedly practiced venesection to excess, can have been utterly mistaken as to its value, the probabilities being that brilliant results in a few cases led them to expect similar effects in many others.

There can be no question that in ruptured cardiac compensation manifesting itself by great venous turgescence so that the jugular veins are prominent and the veins in the arms are so engorged that the valves appear like knots, venesection if freely practiced often gives the patient very extraordinary relief. There is probably little use in taking less than eight to twelve ounces, depending, of course, upon the size and plethoric condition of the patient. Where there is a diffuse cyanosis, more capillary in its nature and unaccompanied by marked venous engorgement, we have never seen venesection do good and believe that it often does harm. So, too, it is not to be forgotten that when a patient is bled by the opening of a vein he loses an enormous number of red and white cells which he will not be able to replace immediately, and these red and white cells may be said to be as valuable to a patient who is ill as silver and gold dollars are in helping him in his struggle with life. In some instances it may be easier for him to replenish his pocketbook than to replenish his store of corpuscles. The more severely ill he is the less rapidly will reproduction of these cells take place.

From Gordon's investigations, in which he called to his aid the *x*-rays to determine the effects of venesection upon the heart, he is led to believe that cardiac dilatation and distention are materially decreased by this therapeutic measure, and we can readily understand why this should be true, with particular reference to the right side of the heart with its associated engorgement of the vena cava, upper and lower, and with the associated increase in the size of the liver from congestion. When in association with ruptured compensation there is also present a nephrosis, then the wisdom of employing venesection has to be even more carefully considered than in the instances which we have named, since nephrosis is often productive or associated with considerable anemia, the condition of the kidneys evidently resulting in a destruction of red cells and a marked diminution in the bacteriolytic power of the blood serum.

Earlier in this editorial note we have pointed out the futility of the venesection in diffuse cyanosis, which often is a manifestation of capillary paralysis from toxemia. In these cases it is remarkable how little blood can be obtained when either the basilic, or any other vein at the elbow, is

opened. Although the vein may seem distended, the capillary paralysis behind the flow of blood results in stagnation, and after the vein contents escape no further blood comes along to take its place. This was well shown when in the early stages of the great influenza epidemic of 1918-19 physicians failed to relieve cyanosis by venesection.

THE DANGERS OF SOME DIAGNOSTIC AND THERAPEUTIC MEASURES.

While it is the custom of certain medical men to be deeply, and very properly, interested in laboratory methods designed to increase the refinements of diagnosis, and while they are prone to consider that our forebears were crude in their diagnostic endeavors, it can be said, for the latter, that they rarely, if ever, did employ diagnostic procedures which were capable of doing harm to the patient.

At times it is well to "stop, look, and listen," and to consider whether, in the effort to make an accurate diagnosis, the real desire of the physician and the patient is achieved, for manifestly an accurate diagnosis can be wished for only with the hope of making the patient better by the institution of rational measures.

A number of years ago a well known professor of medicine published a paper in a prominent journal in which he advocated the use of large doses of iodide of potassium as an aid to diagnosis in cases of suspected pulmonary tuberculosis when the sputum failed to reveal tubercle bacilli. He stated that such medication resulted in a short time in the bringing up of more sputum, and that this, if the case was tuberculous, would usually contain tubercle bacilli and elastic tissue, thereby making a doubtful diagnosis a positive one, but he was so centered upon diagnosis that he failed to recognize that the last thing that he, or his patient, wished for was the hurried bringing on of lung breakdown, and it may be truly stated that such a patient had a diagnosis which was positive and a condition which was inevitably worse than before.

Our attention has again been called to this matter by two recent publications; one of them coming from the laboratories of the Bellevue Hospital in New York under the direction of Douglas Symmers. In this report, St. George reminds us that within the last few years a new antiseptic called mercurochrome-220 soluble has been placed on the market and that a large amount of literature concerning its value in various conditions has already accumulated. That its use intravenously will often produce severe reactions has not been thought to be deleterious, but he reports no less than five cases in which this drug administered intravenously for the purpose of combating septicemia was followed by death, and the autopsy findings as to the kidneys and the bowel were practically identical with those found in bichloride poisoning. In other words, it is the belief of the workers in this laboratory that mercurochrome induced the intense nephritic and intestinal lesions which were found, a view which is supported by the fact that Gettler, who is the Pathological Chemist at the Bellevue Hospital and Toxicologist to the Chief Medical Examiner of New York, showed mercury in all the viscera in even larger amounts than is usually found in cases of bichloride poisoning.

Furthermore, in addition to the five cases reported, St. George states that the Chief Medical Examiner has performed postmortem examinations on all cases reported in which mercurochrome had been used, and that in a series of twelve cases such characteristic lesions were found.

Again, at present much attention is being paid to various phthalein compounds which are being used to determine hepatic function and also as aids in the examination of the gall-bladder by the *x*-rays. Rosenau has deemed it important to issue a word of warning against their careless employment, with particular reference to phenoltetrachlorphthalein, tetrabromphenolphthalein, and tetraiodophenolphthalein. As he well

says, the large amount of literature which has accumulated has usually dealt with these substances from a favorable standpoint.

He then quotes a very considerable number of reports which indicate that untoward effects may follow their employment, and quotes Rowntree and others as having met with thromboses ten times in 67 cases, although it is true that such patients were not in health at the time of the injection because they were suffering from marked anemia with cardiovascular changes. So, too, Sisson had five thromboses in 39 patients, and Friedenwald and Gantt when reporting 169 injections also reported several instances of localized thromboses.

Space does not permit of an extensive citation of all the authorities referred to by Rosenau, but it is quite remarkable that the general average of evil effects seems to be about 13 per cent.

Chills have also been often met with followed by fever, and in Rosenau's work he met with ten untoward reactions consisting in thromboses, reactions and chills in 27 cases. There have also been instances in which death has followed the injection of one of those dyestuffs without other adequate cause than the use of such a substance. In certain patients intense dryness of the mouth, pain in the right hypochondrium and purgative effects have been noted. It would appear from Rosenau's report that most of these evil effects have arisen from the employment of phenoltetrachlorphthalein, that both clinical and experimental work seem to show that its use may strain or damage the liver cell, that all attempts to make this substance non-irritating have failed, and, further, that tetrabromphenolphthalein and tetraiodophenolphthalein also often prove toxic.

These two reports are of far greater value than may appear at first glance because they serve to curb undue enthusiasm and to induce careful consideration of new propositions before they are generally adopted.

In Holy writ it is written, "What vantageth it a man to gain the whole world and lose his own soul." With every desire to avoid being profane this may be paraphrased into "What vantageth it a man to reach a diagnosis that his liver is not normal if in the making of the diagnosis his liver becomes still more abnormal or other parts of his body suffer." Perhaps the old epitaph on the English tombstone, "I was well; I wanted to be better; I took medicine, and here I am," is appropriate. It is a good one to bear in mind in the practice of new diagnostic and therapeutic measures.

THE MEDICAL TREATMENT OF HIGH INTRACRANIAL PRESSURE.

An interesting fact in medical practice is that methods of treatment often become popular because they certainly seem to do good, and then because an attack is made upon them by a single individual, or as the result of several failures to produce the results desired, the plan is cast into the discard. Often the statement is made that there is no scientific basis for the employment of a given plan of treatment that has been thought to be advantageous. After a time, however, with the advance in knowledge, certain investigations show that the original observation as to the value of a given plan was entirely correct, and the profession returns to it with the enthusiasm that often attaches itself to an entirely novel procedure.

As an illustration of this fact we now have the intravenous administration of glucose with or without a hypertonic salt solution for the reduction of intracranial pressure. Our older readers will remember that the treatment advised by their teachers after head injuries was made up of absolute rest, some preparation of opium, and actively purgative doses of magnesium sulphate. Recently it has been proved by so many experimenters and clinical surgeons that hypertonic salt solution, given by the mouth or intravenously, will promptly reduce abnormally high intracranial pressure

that there would seem to be little doubt that such a plan of treatment is once more in the saddle and promises to remain there. Cushing and Foley, Weed and McKibben, and a number of others have all reported upon facts which tend to support this view. Other workers have shown that the intravenous injection of glucose solution tends to reduce brain volume where such reduction is desirable. More recently Peet has written further upon this interesting topic. He found that this method not only reduced abnormally high intracranial pressure, but strikingly relieved many of the characteristic symptoms accompanying it, such as violent headache, nausea and vomiting, and swelling of the optic nerve heads. Furthermore he points out that by the use of glucose a certain number of calories are given to the patient whereby his nutrition is maintained and acidosis put aside.

Physicians are coming more and more to realize that all intravenous injections should be given with great slowness, extending over many minutes, and this is particularly true, as Peet points out, in regard to hypertonic salt and hypertonic glucose. He states that the hypertonic salt solution should not be given faster than 3 cc. per minute, and that the quantity should not be more than 50 to 100 cc. He also claims that the hypertonic glucose solution should be 50 per cent, administered through a small needle by gravity, more than 100 cc. being rarely if ever useful, although he has administered up to 200 cc. The quantities of magnesium sulphate given by the mouth have been three ounces of a 50-per-cent solution, or, if the stomach was not retentive, six ounces of a 50-per-cent solution by rectum.

In cases in which immediate reduction of intracranial pressure is desirable, hypertonic salt solution acts more rapidly than glucose but maintains its effect for a shorter time. In other words, the salt may be given first and the glucose some time afterwards to maintain pressure at a lower point. In patients who have vomited so much that they have been unable to retain fluids, and are in a condition of dehydration, magnesium sulphate by the mouth or rectum is contraindicated, and it is probable that in these cases a glucose solution is better than hypertonic salt because, as already stated, it tends to nourish the patient and does not act so markedly as a diuretic as does hypertonic salt in a person whose kidneys are competent to function normally.

A contraindication to active purgation also holds true in cases in which shock is present.

A NOTE ON TOBACCO.

Physicians as a class may be said to employ tobacco as much almost as any other group of persons in the community. This fact, combined with the additional one that they are often asked for advice concerning its use, makes a recent research by Mendenhall of interest.

It goes without saying that anything when used to excess is deleterious, whether it be water, common salt, alcohol, or tobacco. It also goes without saying that what is in excess for one person is not, necessarily, in excess for another. Mendenhall's work was devoted to determining the influence of smoking tobacco upon the sensory threshold, or the ability to recognize weak induction shocks applied to the fingers. He found that smoking increased sensibility when a condition of depression was present, and diminished it when the primary condition was one of hyperexcitability. At first sight such a conclusion would seem somewhat allied to the old preparation of that medicinal bark that when scraped upward acted as an emetic and when scraped downward acted as a purgative, but as a matter of fact the true deduction is that it is a scientific explanation of one of the reasons why smoking is so commonly resorted to.

As recently pointed out by Stiles in quoting Mendenhall, tobacco seems to tone up or tone down according to the direction of the previous departure from the normal, and Mendenhall points out that rest and sleep have exactly this action, quieting those who are irritable and refreshing those who are exhausted.

It is interesting to note in this connection

that it is not the physical act of puffing smoke which produces the result, but the tobacco itself, because when other substances than tobacco are smoked, the results just quoted are not obtained.

COLONIC IRRIGATIONS.

At one time, and as a part of the treatment for those suffering from inanition which could not be relieved by food and drink taken by the stomach, rectal feeding was widely advocated and practiced. After a better understanding of the physiology of the lower bowel and clinical evidence that eggs, milk and most carbohydrates undergo decomposition without absorption, produce irritation, and are harmful rather than helpful, this form of feeding patients ceased to be practiced largely excepting in the form of sugar, which has been shown to be absorbed together with the water in which it is dissolved. Absorption of water, which may take place and with some rapidity, and makes effective the Murphy drip method, is still employed, and largely, for the alleviation of dehydration, or the stimulation of elimination.

With the increasing atrophy from disuse of the word rheumatism as applied to most of the pains of the trunk and extremities of non-traumatic origin, and the employment of the terms toxic myositis, periarthritis, etc., and with a clear conception that the great majority of these pains are of a toxic nature originating in a focus of infection, there has been a wave of enthusiasm for extirpating tonsils, extracting teeth, straightening septums, removing turbinates, milking seminal vesicles, ligating, cauterizing or injecting hemorrhoids, removing gall-bladders and appendices, suspending viscera, and indeed subjecting to surgical procedure all organs which may be the seat of infection.

If the writings and teachings of Sir Arbuthnot Lane be excepted there has been comparatively little attention, or at least there has been no widely diffused interest, centered in the intestinal tract, and particularly in the colon, as the source of toxicity, and yet it has been abundantly and conclusively proven that from the large gut and, probably secondarily, from the lower part of the small intestine the toxins causing muscular pains and general impairment of health are more frequently absorbed than from any other region of the body. The amount of toxins formed and their absorption are to an extent dependent upon delay in the evacuation of the fecal content which remains after the food ingested has been robbed of all its nourishing qualities. This content exhibits always an abundant intestinal flora, generally harmless and apparently desirable; often the reverse. Those who believing in the intestinal origin of toxic symptoms habitually have examinations of the feces made, find a fairly close association of symptoms and bacterial content, and claim astonishing results from the injection of autogenous vaccines. They supplement, however, these injections by other forms of treatment, to-wit, efforts to change the intestinal flora to a more beneficent form by the mouth ingestion of lactic acid ferments, by careful regulation of the diet, by substituting buttermilk for excess of food, by attention devoted to general health, and particularly by colonic lavage, with normal saline, weak permanganate, bicarbonate of soda solution, or other non-irritating fluid.

Colonic lavage is practiced by putting the patient in the knee-chest position and injecting one or two gallons of fluid. The injection pipe should be of rubber introduced not more than four inches and so arranged that when a moderate quantity of fluid flows in and the patient feels the desire to defecate the flow is stopped, and the injected fluid is ejected through a side tube connecting with the main one and discharging into a receptacle by the side of the bed. The injection is then repeated, the whole process requiring from one-quarter to half an hour. The injection given thus gently and without undue pressure passes through the rectosigmoid sphincter into the sigmoid

and the colon, stimulates peristalsis, and carries out with it the feces which would otherwise be retained.

There is a popular belief that in making a colonic irrigation the soft-rubber tube should be passed in a foot to eighteen inches that it may reach the sigmoid or even the ascending colon. It has been abundantly proven that it is impossible to pass a soft tube beyond the rectosigmoid juncture, and if the tube be introduced to a depth of more than six inches it curls upon itself.

Under these colonic irrigations, supplemented by diet, by the use of paraffin oil, which apparently lessen absorption from the colon, cases of impaired health and backache and peripheral pains which have not yielded to extraction of teeth or other operations will at times exhibit a convalescence so rapid and complete that they are with difficulty restrained from loudly advocating at all social gatherings they may attend a universal application of colonic lavage; and should one complain of any ailment he is likely to be deluged with details of the rectal treatment, which to one not calloused by its daily application seem an inapt subject for discussion in mixed company.

FOREIGN BODIES IN THE LUNG.

The practical creation of the art, and well may it be so-called, of bronchoscopy, its application to the diagnosis of pathologic conditions of the respiratory tract, and its efficiency as an aid in the removal of growths, of foreign bodies, and in securing drainage properly can be accredited to Chevalier Jackson, whose world-wide reputation has been abundantly justified not only by his extraordinary success, but by the fact that these manipulations, of which he is easily the master, are being practiced, and with his instruments, by many others.

Success in this field of surgical endeavor has been so brilliant as to somewhat obscure the progress made by surgeons for the removal of foreign bodies embedded in lung tissue and not accessible through the bronchial tree. Such success has been particularly noteworthy in the hands of Dr. Petit de la Villeon, who wrote to Dr. J. J. Buchanan (*Annals of Surgery*, January, 1925) in the early part of 1925: "By my method, more than 1000 intrapulmonary projectiles have been extracted by myself and my friends with a mortality of five patients (½ of 1 per cent). The method is classic to-day in France. It is adopted by the great majority of surgeons because of its certainty, its safety, its simplicity, and its efficiency."

De la Villeon's method is termed "the buttonhole" operation. Through such an incision, and guided by the fluoroscope, he pushes a blunt pair of forceps through the pleura and lung tissue to the foreign body, which is seized and withdrawn. When projectiles are located at the root of the lung and in the region of the hilum he does not advocate this procedure.

Lefort notes that even after considerable groping in the lung tissue the patient experiences little reaction and may soon walk about; within two days. Duval in a personal letter to Buchanan notes he has removed 80 projectiles from the lungs by his own method, with one death from double bronchopneumonia. Marion reported 153 patients operated on by rib resection, anchoring of the lung to the parietal pleura, incising to the foreign body, and removing it by forceps. There were four deaths.

Buchanan reports on a case of his own shot in Russia in 1920, with the lodgment of a bullet under the third rib and second interspace about 1½ inches from the left border of the sternum, and at a depth of three inches from the anterior chest wall. Chevalier Jackson believed that the removal of this missile by bronchoscopy would be a dangerous procedure because of its location so close to the large vessels. Buchanan resected 2½ inches of the third rib overlying the bullet and packed the wound. The next day under cocaine four catgut sutures were inserted, suturing the lung to the parietal pleura. The lung was incised, and the bullet was located by needle passed in about 2½ inches. There was some air

aspirated and an irritative cough occurred, the patient expectorating some blood. Aspiration was stopped and the wound was lightly packed. Two days later, without anesthesia, the ball was again located. Adhesion of the pleural layers by this time was complete. Contact with the ball was again made with a needle and the track of the needle enlarged with a bistoury. The finger was then passed to the projectile and acted as a guide to the bullet forceps, which removed the missile. There was fairly free bleeding, which quickly ceased. The external wound was lightly packed with iodoform gauze, no sutures being used. Convalescence was uneventful.

From current literature it would seem that operations for removal of foreign bodies from the lungs are no more frequent now than they were before the war, although a definite method for both location and removal has been set forth. The mortality under proper procedure and in skilled hands seems astonishingly low.

Progress in Therapeutics

Medical Therapeutics

The Management of Cases of Colloid Goitre.

In *Minnesota Medicine* for December, 1925, HABEIN asserts that endemic goitre, which includes colloid goitre, adenomatous goitre, and combinations of both types, may, to a large extent, be prevented in man and animals by the oral administration of iodine. This has been quite definitely proved, and is one of the important discoveries of the last decade. Diffuse colloid goitre without adenomas with lateral lobes more than 6 cm. in diameter are relatively rare in the United States; furthermore, adenomas once developed probably never disappear entirely. We know that an adenomatous thyroid not infrequently becomes hyperfunctioning, and, too, that occasionally the administration of iodine to patients with adenomas will initiate hyperthyroidism. Hyperfunction once initiated by the administration of an excess of iodine will continue for years, even though the iodine is discontinued. This factor should be seriously considered in the treatment with iodine of diffuse colloid goitres containing adenomas. Adenomatous goitre frequently becomes a surgical condition.

Iodine in small doses should be given to all individuals during early childhood and adolescence. At what age it should be started and at what age discontinued cannot as yet be definitely stated. It should also be given during the latter months of pregnancy and during lactation. Two grammes (30 grains) of sodium iodide may be given in divided doses over a period of two weeks, this amount to be repeated semiannually. However, it is preferable to give smaller doses of iodine at weekly intervals throughout the greater portion of each year. Within the last few years many cities have initiated the practice of iodizing the water supply by adding one part of sodium iodide to 100,000,000 parts of water. Several brands of iodized table salt are on the market. These usually contain one part of iodine in 5000 parts of sodium chloride. Whether or not the person will receive enough iodine to prevent endemic goitre or whether there is enough iodine in the water and salt so treated to initiate hyperthyroidism in persons having adenomatous goitre has not yet been determined.

Iodine has long been a standard remedy in the treatment of diffuse colloid goitre.

However, for several years at the Mayo Clinic the use of thyroxin intravenously, or of desiccated thyroid orally, has largely supplanted iodine in the treatment of this type of goitre. If a patient with diffuse colloid goitre is given from 5 to 10 mg. of thyroxin intravenously, or its equivalent in desiccated thyroid orally, and it is absorbed, the bruits and thrills will disappear in a few hours. During the first twenty-four hours the gland shrinks perceptibly, and if extremely vascular may be reduced as much as one-third in volume. In moderately large goitres most of the colloid may be absorbed in from one to two weeks, and some of the very largest disappear in from three to twelve weeks. It is frequently impossible to reduce them to normal size.

At the beginning of treatment the patient's metabolic rate must be accurately determined. If the rate is below normal, it must be brought to normal or slightly above and maintained there by the daily administration, orally, of desiccated thyroid; if it is not continued after the initial dosage the vascular phenomena may reappear, and the thyroid gland will once more increase in size. The length of time desiccated thyroid should be continued depends somewhat on the results of the treatment. If the gland is materially reduced in size, desiccated thyroid is given for a few weeks longer, and then a small dose of iodine is given. If after a few months there should again be a tendency to enlargement, the treatment may be repeated.

Largely on account of the expense incurred in repeated basal metabolic rate estimations, the routine treatment of small colloid goitres with desiccated thyroid is not recommended. Iodine may be used in these cases, and it may also be tried in cases of large colloid goitres in which the determination of basal metabolic rates is impracticable or impossible.

There are many practical problems in the treatment of patients having diffuse colloid goitre. Desiccated thyroid orally has been administered almost exclusively in the Mayo Clinic. After the patient's true basal metabolic rate has been accurately determined, relatively large doses are given daily for three or four days. This usually amounts to from 6 to 10 grains if the metabolic rate is somewhat below normal; if normal, somewhat smaller doses are given. At the end of a few days basal metabolic tests are again made and the dosage regulated from time to time so that the patient's rate is maintained at or slightly above normal. Patients vary considerably in the amounts of desiccated thyroid needed to bring about a normal metabolic rate; as a result, frequent observations and tests are necessary. It should be emphasized that the results sometimes obtained in the treatment of diffuse colloid goitre, with either iodine or desiccated thyroid, are disappointing. On the other hand, the results are very gratifying in most cases. From an economic point of view the time required and expense incurred in the treatment are considerable. However, the early treatment of colloid goitre may sometimes prevent the formation of adenomatous tissue, and in this way save the patient from a thyroidectomy later, and even though the gland is not materially reduced in size, treatment tends to prevent further enlargement.

Operation in cases of diffuse colloid goitre is rarely, if ever, indicated. There is no hyperthyroidism and the goitres often disappear spontaneously in the third decade or earlier if treated with iodine or desiccated thyroid. In certain cases, especially if the goitres contain large adenomas, operation must be resorted to, but it should be delayed until after the patient's twenty-fifth or thirtieth year.

He concludes that endemic goitre, of which colloid goitre is one form, is caused by a lack of available iodine in the thyroid gland.

Endemic goitre can be prevented largely by the oral administration of iodine.

Prevention, or early treatment, is exceedingly important.

Satisfactory results may be secured from the treatment of diffuse colloid goitre.

Iodine may be used in the treatment, but desiccated thyroid is more satisfactory.

Nephritis—Treatment and Prognosis.

In the *British Medical Journal* of December 5, 1925, MACLEAN, in a discussion of this subject before the Section of Medicine of the Royal Society of Medicine, stated that he had really nothing new to bring forward except a few small points which required emphasis. From the clinical aspect nephritis was best divided into acute and chronic types, and all the chronic forms tended eventually to present the same picture. In the acute form all the renal functions were, temporarily at any rate, "knocked out," while in the chronic forms, the chronic interstitial nephritis of the textbooks, it was the elimination of the nitrogenous substances which was principally disturbed. He emphasized that there was no such disease as "chronic parenchymatous nephritis;" this was really a subacute stage, and in the course of time patients suffering from this either got better, died, or passed into the chronic interstitial type, and this was confirmed by histological evidence. In the typical subacute stage water-logging was the most striking clinical feature, and so far as the nitrogenous waste products were concerned the kidney was found to be doing its work well. It was a curious fact that as soon as chronic interstitial changes commenced the kidney again assumed its work of water excretion in a satisfactory manner and all edema disappeared.

With regard to the various tests for the diagnosis of nephritis, Maclean urged that the simple tests gave all the information necessary and elaborate experiments were quite superfluous. Blood urea determinations and estimations of the concentration of urea in the urine were the two most satisfactory procedures. To the general practitioner the second of these was the more useful in ordinary circumstances, and this test was particularly important when it was realized that high blood urea figures might be found in conditions which were not strictly renal in origin. The presence and amount of albumin in the urine merely indicated the possibility of nephritis and gave no help as to the severity of the disease nor as to its prognosis. A simple estimation of the concentration of urea in any specimen of urine gave quite enough information, and if this was found to be between, say, 2.5 and 3 per cent, any serious damage to the kidney could be excluded.

As far as treatment was concerned, he stated that there was nothing new to discuss. He thought it rather absurd to give large amounts of milk to cases of acute nephritis if the object was to reduce the amount of protein in the diet, but recent work has shown that protein in moderate amounts was not harmful to the kidney. Giving excess of water to wash out the kidneys was a useless procedure. With regard to the treatment of edema in the subacute cases, physical means were probably more useful than drugs, but large doses of urea were often helpful, and recent work in America goes to show that calcium chloride and ammonium chloride might sometimes be successful. For prognosis the estimations of blood urea and urea concentration in the urine gave most help. In cases of hyperpiesis the outlook largely depended on whether the kidneys were affected or not, and, generally speaking, the longer obvious kidney damage was delayed the better the prognosis.

Langdon Brown, in discussing this subject, expressed his complete agreement with Maclean, and welcomed particularly the indicated release from the tyranny of tests. He recalled that he had opened a discussion on a similar subject fifteen years ago, and had then stated that the conventional views with regard to restricted protein intake, a knowledge of the total urea output, flushing out the kidneys, and elimination of metabolic products by the skin were all based upon erroneous ideas. Modern work had confirmed these views. In acute cases he believed in giving fruit juice and sugar for the first few days, and in subacute cases he thought urea more useful in getting rid of edema than a high protein diet. He thought diaphoresis was very useful as long as the patient was not exhausted by it, and referred to the treatment of one case of uremia by hydrochloric acid. With regard to nephritis in general, Brown thought that

the patient's lot would be greatly improved when it was more widely recognized that many of the routine procedures adopted were futile.

The Uses and Abuses of Endocrine Therapy.

In the *British Medical Journal* of December 5, 1925, BROWN well says that there is no doubt that the medulla of the adrenals yields an intensely active extract. Although this medulla is formed from sympathetic ganglia and adrenalin produces just the same effect on any part as if its postganglionic sympathetic fibers have been stimulated, it has been urged that these two facts are not connected, and throw no light on the function of the adrenals. But this is pushing scientific agnosticism rather far when one remembers that the sympathetic is designed to produce wide-spread effects, and that these wide-spread effects would be assisted by the simultaneous liberation of a chemical stimulant such as adrenalin. He prefers to accept the mass of evidence which points to adrenalin as a general sympathetic stimulant which can be drawn on in an emergency. He takes the case of asthma. Here is a paroxysmal spasm of plain muscle, resulting from vagal overaction; anything which stimulates the antagonistic sympathetic relieves the spasm; so does adrenalin. Surely this is not merely a coincidence.

There is no satisfactory evidence that adrenalin is absorbed from the alimentary tract; possibly the local vasoconstriction it excites prevents this. This limits its usefulness for oral administration to esophageal spasm, gastrostaxis, and the relief of vomiting, in each of which it can act locally on the appropriate sympathetic endings. It can act also as a local vasoconstrictor on mucous membranes such as the conjunctiva and the nose, and, indeed, appears to be absorbed sometimes from the latter. Injected subcutaneously or intravenously it can have a powerful effect in raising the blood-pressure, augmenting the heart, relaxing the bronchial muscles, and converting glycogen into sugar. But all of these are emergency measures and the drug is of little, if any, use in substitution therapy for the chronic adrenal lack of Addison's disease. For injection he gives 3 to 5 minims for its local effects, by the mouth 10 to 30 minims of the 1-in-1000 solution.

Although we know there is a close association between the cortex of the adrenals and the gonads, he has not seen any definite results from cortical extracts.

Hypnotics of the Barbituric Acid Series.

In the *Journal of Pharmacology and Experimental Therapeutics* for December, 1925, NIELSEN, HIGGINS and SPRUTH report preliminary experiments with eight hypnotics of this series on cats and dogs. These showed that both of these animals are unsatisfactory for comparative tests on the barbituric acid series, because administration is cumbersome, reaction slow, and a standard of reaction difficult to establish. Accordingly, the albino rat was tried, and found to react readily and with sufficient constancy to the members of this series.

The toxicities and efficiencies of sixteen members of the barbituric acid series were determined for the albino rat. The index of safety for each hypnotic tested was expressed as the difference between its minimum fatal dose and minimum effective dose in percentage of its minimum fatal dose.

In order of increasing toxicity these barbituric acid derivatives were found to rank as follows: di-n-butyl, di-ethyl (Barbital), n-butyl allyl, n-butyl ethyl (Neonal), ethyl allyl, n-propyl allyl, iso-butyl allyl, iso-amyl allyl, n-butyl iso-propyl, di-allyl (Dial), iso-amyl ethyl (Amytal), phenyl ethyl (Luminal), iso-propyl allyl (the hypnotic agent in Allonal), iso-propyl ethyl, sec.-butyl allyl.

In order of increasing efficiency: di-ethyl (Barbital), di-n-butyl, phenyl ethyl (Luminal), ethyl allyl, iso-propyl ethyl, iso-amyl allyl, n-butyl allyl, n-butyl iso-propyl, n-propyl allyl, n-butyl ethyl (Neonal),

di-allyl (Dial), iso-amyl ethyl (Amytal), iso-propyl allyl (the hypnotic agent in Allonal), iso-butyl allyl, sec.-butyl allyl.

In order of increasing safety margin: iso-propyl ethyl, phenyl ethyl (Luminal), di-ethyl (Barbital), ethyl allyl, di-n-butyl, iso-amyl allyl, n-butyl iso-propyl, iso-propyl allyl (the hypnotic agent in Allonal), sec.-butyl allyl, n-propyl allyl, iso-amyl ethyl (Amytal), di-allyl (Dial), n-butyl ethyl (Neonal), iso-butyl allyl, n-butyl allyl.

Postanesthetic Hypoglycemia.

In the *Bulletin of the Johns Hopkins Hospital* for December, 1925, JOSEPHS states that the curve of blood sugar, the excretion of acetone bodies, and the respiratory quotients, have been studied in a series of children who had undergone short periods of anesthesia. Hypoglycemia of moderate degree was found to occur with great regularity eighteen to twenty-four hours after the anesthesia. This hypoglycemia was preceded usually, but not invariably, by an increase in the respiratory quotient and was accompanied by an increased excretion of acetone bodies in the urine. These changes were greater than could be accounted for by starvation.

Lymphadenoma (Hodgkin's Lymphogranuloma).

In the *Lancet* of December 12, 1925, ROLLESTON states that the universal fatality of this disease, which in other respects has many resemblances to tuberculosis, may perhaps be correlated with the much less marked tendency of the lesions to undergo necrosis and fibrosis, as if the unknown cause were more persistent, though not necessarily more virulent, and the resisting powers of the body less able to bring the disease to an end. The absence of extensive necrosis and of caseation might suggest that the process is less acutely virulent.

The duration of symptoms varies; acute cases lasting a few weeks are rare, and the suspicion may arise that from the presence of internal glandular disease they are not so acute as the duration of obvious signs, due to generalization, would suggest. When the primary site is in the thorax or abdomen and extension later occurs to superficial glands, the course may, when calculated from their detection, be very short; the primary enlargement, especially in the chest, may, owing to the adaptability of the viscera, remain latent for a long time and be detected by skiagraphy only.

Prognosis as to duration of life depends on treatment by arsenical preparations and irradiations, for there is not any evidence that, as in tuberculosis, a spontaneous cure occurs. The effect of arsenical preparations is at first most successful; but relapses occur, and eventually the drug fails to control the disease, as if the unknown virus became arsenic-fast or the morbid process underwent some change. The same appears to be true with regard to the radiations of *x*-rays and radium, but in most exceptional instances this does not hold good; Schniffner recorded the case of a woman who for eleven years was benefited by *x*-rays. It has even been suggested that *x*-rays may lead to generalization of the disease, just as it has sometimes appeared to do in carcinoma. Simmonds and Benet prefer radium to *x*-ray treatment, and urge that it should be applied on all the lymphatic areas in the body and not only on those obviously affected.

Vaccines of the diphtheroid organism have not proved successful, but Bunting mentions trials with an immune serum (to this organism). Success has attended the treatment by W. B. Coley, of New York, of Hodgkin's disease by repeated injections of the mixed toxins of erysipelas and bacillus prodigiosus and of massive doses of radium; of this he has had much recent information from him.

Surgical opinion has long been adverse to removal of lymphadenomatous glands on account of the difficulty of complete extirpation and of the frequency of similar intrathoracic disease. Synmers throws out a warning of the danger of secondary infection as a result of excision of the inguinal glands. Removal of infective foci,

such as the tonsils, and free surgical extirpation of the disease in an early stage have been advocated by Bunting and Yates on the lines of the Halstead and Crile operations for the lymphatic glands in mammary carcinoma. But the cases are not necessarily analogous, for the primary growth in the mamma is removed, whereas in lymphadenomatous glands in the supraclavicular fossæ and neck the thorax or abdomen may be the primary focus.

The Under-rested Child.

In the *Archives of Pediatrics* for December, 1925, RAMSAY states that there are certain well-defined signs of the failure to secure adequate rest and recuperation, namely: first, failure to gain in weight; secondly, fatigue-posture; thirdly, irritability. When in a case of failure to gain in weight we have excluded gross errors in diet and hygiene, and gross physical defects, we are justified in considering lack of rest as a factor. Here a judicious use of the rest-cure will demonstrate the truth. He has repeatedly demonstrated the correctness of the inference by putting the child to bed. Almost immediately improvement is noted. Occasionally the first gain in weight which has occurred in many months is recorded as a result of taking the child off its feet. Usually such a drastic procedure is not necessary, it being sufficient to prolong the hours in bed, shorten the hours of school work, limit the amount of strenuous play, enforce a plain unstimulating diet, enjoin fresh air and pure water. A programme which has proven satisfactory has been bed from 7 P.M. to 10 A.M., breakfast in bed, a walk with parents or nurse, followed by quiet play with books, drawing materials, or similar means of amusement on a screened porch. After luncheon, rest on a couch two hours, followed by one hour quiet play, supper, and bed at seven o'clock. Where children cannot follow such a programme, rest in the middle of the morning and afternoon will restore strength, increase the power of food assimilation, and promote appetite. Children should be taught to rest quietly, with or without sleeping. Rest periods of twenty to thirty minutes with the body recumbent, clothing loose, abundant fresh air, and no means of amusement, have proved beneficial in the school and in the home.

The rule as to diet is the simple one of adjusting the food to the digestive power of the patient. To give a frail asthenic child a rich diet is to defeat our own ends. A plain, bulky, nutritious diet, avoiding the concentrated rich foods, especially meat and eggs, will be better handled, promote elimination, and build up a normal appetite. In the digestion of food of any kind, muscular activity is a considerable factor. Usually in children we have this in abundance. When, however, we are deliberately limiting the activities of a child, we must be careful about the feeding of milk, eggs, fats, and meats. A limited amount of these, properly balanced by grains, leafy vegetables, and fruits, may prove of benefit, where an abundance may defeat our efforts by interfering with the elimination of end-products. As to tonics, whatever their place in stimulating adults, they have no place in the therapeutics of the under-rested child. In the increasing of weight in these children the greatest aid is rest, not food or medication.

Coronary Occlusion.

In the *United States Naval Medical Bulletin* for December, 1925, CLARK reminds us that coronary occlusion has long been recognized as a cause of angina pectoris, but it is only in recent years that the diagnosis of coronary occlusion could be made with reasonable certainty, before death, by clinical signs and symptoms.

Of importance in diagnosis are:

(*a*) Anginal pain, which persists longer than the ordinary attack of angina pectoris, lasting from one to several hours, sometimes spoken of as *status anginosus;* not relieved by inhalations of amyl nitrite and at times but slightly by morphine. The pain may involve the upper abdomen and so be confused with an acute surgical condition.

(*b*) Pericardial friction rub, which may

be heard over a limited area and may disappear quickly.

(*c*) Fall in blood-pressure, sometimes gradual, over a period of forty-eight to ninety-six hours after the attack; sometimes after a shorter interval and more abruptly. When present, it is usually well marked—a drop of 40 or more millimeters of mercury for the systolic pressure, but not a proportionate drop in the diastolic, so that there is a much smaller pulse pressure than usual for the individual.

The fall in blood-pressure does not occur when the right ventricle is involved alone, but in such cases one may expect evidence of disturbances in the pulmonary circulation, such as pulmonary edema or pulmonary infarction.

(*d*) Fever of moderate degree—99.6° to 101°, sometimes higher.

(*e*) Leucocytosis, usually not higher than 20,000 per cubic millimeter.

(*f*) Inversion of the T waves in the electrocardiogram.

(*g*) Many other symptoms which are less constantly to be relied upon for diagnosis are: Dyspnea; nausea; vomiting; sweating; cough; cyanosis or ashy pallor; irregular heart action, due to extrasystoles or auricular fibrillation. Gallop rhythm or other cardiac manifestations may occur.

The Mechanism of Death from Quinidine and a Method of Resuscitation: An Experimental Study.

In the *Journal of Clinical Investigation* for August, 1925, GORDON, MATTON and LEVINE state that as a result of experiments on cats the minimal lethal dose of quinidine bisulphate was found to be dependent upon the speed of administration. Whereas 25 mgm. per kilogramme were usually fatal when given in a single dose, on the other hand, when smaller doses were given at intervals of from six to twelve or twenty-four minutes, the total minimal lethal dose correspondingly increased to about 0.1 gramme per kilogramme.

Immediately following injections of non-lethal doses of quinidine there was a striking fall in blood-pressure. This began a few seconds after the administration was started.

The effect on the respiration was directly proportional to the size of the dose. In giving a small dose the breathing was essentially unaffected, whereas after a moderate dose there was usually a temporary, very brief cessation of the respirations. With increasing sublethal doses there was a slowing of the rate and a decrease in the depth of the respirations. With lethal doses the breathing gradually failed and finally ceased. The heart always continued to beat after complete respiratory failure, for even as long as two minutes.

The appearance of the animals under quinidine intoxication was not unlike that manifested by a fatal case in the clinic.

It was found that when animals were given lethal doses and the respirations had ceased for a period of one to two minutes, they could be revived satisfactorily by artificial respiration combined with the use of caffeine and sodium benzoate. The caffeine alone was frequently sufficient, although artificial respiration alone was much more effective. When the two procedures were combined recovery took place more rapidly.

There were changes in the electrocardiograms of varying degree, depending on the size of the dose. With small doses the changes were slight and transient. With larger ones the curves indicated a grave intoxication of the heart muscle. Fibrillation of the ventricle was very rarely observed.

Roentgenograms taken at frequent intervals during the fall of pressure after an injection of a moderately large dose of quinidine showed at first a slight contraction of the heart followed by a dilatation. With small doses a contraction but no dilatation occurred. There was a marked dilatation as a terminal event.

It is suggested that the method of resuscitation employed in reviving the animals in these experiments may be applicable in the clinic in the treatment of quinidine intoxications.

The Treatment of Spasmophilia.

In the *Lancet* of December 12, 1925, SPENCE states that the management includes (*a*) general measures devoted to a correction of errors likely to affect calcium utilization or produce alkalosis; (*b*) emergency measures directed toward a relief of the urgent spasmodic symptoms such as laryngospasm, convulsions, etc. In a mild or latent case general measures will suffice, and should be continued until all evidence of spasmophilia disappears. In a severe case with spasmodic symptoms the general treatment must be promptly instituted and eagerly pursued, and reënforced by some method of local and symptomatic treatment.

In the child's diet and digestion lies the fault in the majority of cases of idiopathic infantile tetany occurring in the winter months, the lack of sunlight acting as an "accessory after the fact." An ample supply of calcium must be provided and any errors of digestion corrected to insure efficient absorption. After a few hours' starvation, while a purge is being given, a suitable diet of cow's milk should be prescribed or, when possible, breast milk should be given. Additions should be made to the diet of foods relatively rich in calcium—for example, cabbage, turnip, and oatmeal—given in the form of vegetable purée, with the addition of oatmeal gruel. If there is any doubt about the supply of calcium in the diet, calcium chloride in doses of 10 to 15 grains, two or three times a day, should be added. Intestinal indigestion should be treated on the traditional lines of cutting down the intake of fat and excess of carbohydrates and giving an increased amount of protein. Skimmed cow's milk or protein milk serves as a suitable basis of such a diet. Potatoes, bread, and rice, containing relatively little calcium, should be replaced by vegetable purée, oatmeal, junket, and meat. An initial dose of castor oil should be followed by a daily powder containing calomel, rhubarb, and ginger suitable for the age of the child. Cod-liver oil plays a part in the absorption or utilization of calcium and should be given in all cases. A teaspoonful of a 50-per-cent emulsion twice a day suffices.

The chief hygienic measure is to have the child nursed as much as possible in the open air and sunlight. The modern fashion of withdrawing children from out-of-doors sunlight to indoor artificial light treatment is to be deplored; but at certain seasons, and in large industrial towns, a daily exposure to mercury-vapor lamp will serve as a useful supplementary method.

Most important, however, of the measures of general treatment is the systematic administration of acids, best given as hydrochloric acid or ammonium chloride. A child of twelve months should have up to half a drachm of acid hydrochlor. dil. (B. P.) diluted in 10 ounces of water in the twenty-four hours. The acid solution can be suitably given as a diluent to the milk, care being taken not to exceed the proportion of acid to milk which will produce clotting—roughly one pint of acid solution to two pints of milk. Ammonium chloride is just as efficacious. After absorption the ammonium is converted to urea and HCl liberated. A suitable dose is a drachm, dissolved in 10 ounces of water, to be taken during each twenty-four hours, or added to the milk.

As to symptomatic treatment, the chief urgent symptoms of spasmophilia are convulsions, laryngospasm, and carpopedal spasm; success in their relief will be but temporary unless general treatment has been instituted. When called to see a child who has had a convulsion, the first step is to decide that it was spasmophilic in origin. Chvostek's sign (a sudden spasm on tapping one side of the face) will usually decide the diagnosis, but meningitis, polioencephalitis, pyelitis, pneumonia, and other diseases should be excluded. A hot bath with cold compresses to the head is a valuable therapeutic measure which will almost certainly have been resorted to by the nurse or mother. In the presence of an actual spasmophilic convulsion, preparations should be made for a rectal washout and the rectal administration of chloral hydrate while the hot bath is being given. Chloral hydrate is remarkably effective and safe in these cases. For a child of twelve months a dose of 10 to 15 grains dissolved in water

should be left in the rectum after a preliminary washing out. If the child is able to swallow, 3 grains chloral hydrate should be given by the mouth instead. In refractory cases an inhalation of chloroform should be used. A practitioner called to such a case should take a rubber catheter, a solution of chloral hydrate, and chloroform.

Laryngospasm, or laryngismus stridulus, is an urgent spasmophilic symptom; though improbable, it is yet possible that the condition may be fatal, the spasmodic closure of the glottis going on to produce cyanosis, convulsions, and death. The child should not be moved until the urgent symptoms have been controlled, since exposure to chill and fright, such as might occur in a cab on the way to a hospital, exercises a deleterious effect. Hot sponges should be applied to the larynx, while chloral hydrate and rectal washouts are used. While awaiting the effect of treatment it is wise to confirm the diagnosis, excluding laryngeal diphtheria or impacted foreign body.

The symptoms of carpopedal spasm are not necessarily urgent, but usually require active special treatment, leading after a few hours to much pain and discomfort. The child is usually miserable and crying. Successions of hot baths with chloral hydrate or antipyrin should be tried, until the general measures of treatment have produced their effect.

Almost every case of spasmophilia—*i.e.*, of idiopathic infantile tetany, or "spring" tetany—yields readily to treatment on these lines. In the rare case of persistent or recurrent tetany which resists treatment there is commonly some chronic bowel condition, such as celiac disease or idiopathic dilatation of the colon, which demands treatment. If, however, there is no chronic intestinal disease to account for it, a disease of the parathyroids may be suspected. Spence is in no position, however, to say how this can be proved, for in those cases of persistent and recurrent tetany in a child in which he has been forced to this diagnosis, various samples of parathyroid gland had no effect. The whole question of parathyroid therapy in tetany is centered in the problem of the preparation of an active extract. No doubt there will be a great scope for its use when this problem is solved, and the recent experiments of Collip and Clarke appear to mark a definite advance. Nevertheless, it is improbable that spasmophilia in infants is due to a parathyroid lesion. If it were so we would not expect it to be so readily curable as it is without the aid of parathyroid treatment.

The Use of Insulin in Eclampsia.

In the *American Journal of Obstetrics and Gynecology* for December, 1925, STANDER and DUNCAN state that at present their treatment of eclampsia is as follows:

As soon as the patient is admitted, the modified Stroganoff treatment is started; a specimen of blood is obtained and a chemical analysis done immediately. The sugar and CO_2 values are carefully noted, and should these show an undue rise in the blood sugar and a decrease in the CO_2 combining power, from fifteen to twenty-five units of insulin are administered. With the insulin they usually give a protective dose of glucose, which is about 2 grammes of glucose per unit of insulin. With a marked hyperglycemia, it is perhaps not necessary to give glucose with the insulin, but in such cases it is advisable to have orange juice available should the patient develop a hypoglycemia.

Their indications for the use of insulin in eclampsia are, therefore, coma or semiconsciousness following a convulsion together with a CO_2 combining power of 30 or below and an elevated blood sugar. The dosage of insulin is gauged by the degree of hyperglycemia and the weight of the patient.

The general practitioner as well as many obstetricians often have not the facilities to determine the blood sugar and CO_2 combining power. They can judge the degree of acidosis only by the condition of the patient. They feel that where the physician is unable to have an immediate analysis of the patient's blood, a persisting coma or semi-

conscious state following a convulsion in what they have described as the acute type of eclampsia, warrants the use of insulin. In such cases they would advise the use of a protective dose of glucose or of orange juice, because it would be very difficult to sense the development of a hypoglycemia without laboratory facilities.

Novasurol: An Effective Agent in Relieving the Ascites Complicating Cirrhosis of the Liver.

ANDERSON in the *Boston Medical and Surgical Journal* of December 31, 1925, states that a preliminary subcutaneous injection of 0.6 cc. to determine any idiosyncrasy to the drug was given. No untoward reaction being produced, the patient was given nine injections at intervals of four to six days, during the next month—a total of 12 cc. of the drug being administered. Marked diuresis followed, an average of 4 liters being passed in the first twelve hours, and a liter every twelve hours thereafter. During the treatment the patient was kept on a low fluid intake with 90 grains of ammonium chloride, daily. Whenever gastric disturbances were evident, the chloride was omitted. The abdominal circumference was reduced 15.6 cm., and the patient's weight reduced sixteen pounds. The dyspnea, which was entirely mechanical, disappeared, as did physical signs of fluid. The treatment was therefore discontinued.

Two months later, at the time his paper was going to press, the patient was in better health than at any time since the onset of his malady. The ascites was comparatively negligible, the abdominal circumference being 93 cm.

In this case the patient's general condition and his low liver function seemed to contraindicate operative procedures. The novasurol, with comparatively little irritation to the kidneys (on which its chief action is evident), increased the elimination on both solids and fluids, and thus relieved the ascites and obesity. There was none of the collapse which had followed paracentesis in this case. Possibly this collapse was due to too rapid decompression. Anderson well says: it is too early to say how lasting the relief will be, but it has already been more prolonged than that following any other mode of treatment.

Of the various medicinal means which have been used to relieve ascites in cases of cirrhosis of the liver, intravenous injections of novasurol are not only the most effective, but moreover do not impair the patient's general strength, of which he usually has little to spare. It is also less irritating to the kidney than other diuretics. In cases in which novasurol alone fails to produce a satisfactory diuresis, the additional use of ammonium chloride often brings about the desired result.

A preliminary subcutaneous injection of novasurol, to detect any possible idiosyncrasy to the drug, is essential, and will usually eliminate the possibility of later untoward results. Patients must, however, be watched closely for salivation and other mercurial symptoms. A low water intake and a diet with a very low salt content should be insisted upon during the treatment.

Treatment with novasurol is advocated for patients whose general condition is poor, who suffer from advanced cardiac disease, and in whom the functional activity of the liver cells is greatly reduced. It is not intended to replace or postpone operation in cases in which the indications for this more radical form of treatment are essential.

Streptococcic Infection of the Anterior Angle of the Naris.

In the *Boston Medical and Surgical Journal* of December 31, 1925, MONTGOMERY and CULVER state that the treatment for this kind of nasal streptococcic infection is simple and effective, and consists in the application of an ointment containing either calomel or oxide of mercury. While the application of this ointment constitutes the principle of the treatment, attention to details is also necessary if success is to be attained in individual cases.

They usually order an ointment of six per cent, or a half-drachm to an ounce, as follows:

℞ Hydrargyri oxidi rubri, ℥ss;
Lanolini,
Vaselini, āā ℥ss.
This ointment should be well triturated.

Before applying the ointment it is often well to clip the long stout vibrissæ, and then the nostril should be well soaked with boric acid solution. The best way to do this is to add a heaping teaspoonful of boric acid powder to a glass of water, and keep this solution warm in a tin receptacle over the flame of a spirit lamp. Dip pledgets of cotton in this warm solution and introduce them into the affected nostril, changing them frequently. Care should be taken to pack the pledgets well into the deep fossa behind the tip of the nose. After a thorough soaking to soften well all crusts and the epithelium, the ointment may be introduced, taking care to massage it thoroughly into the angle and into the fossa, for we have to do with a parasite which is not alone on the surface of the skin and mucous membrane, but also frequently lies in its depth, as it is anaerobic.

When this angle is found affected, and is efficiently treated, it is sometimes astonishing how quickly an erysipelas of the face will subside.

[The massage should be very gentle to avoid spreading the infection.—Ed.]

The Etiology of Chronic Ulcerative Colitis.

In the *Archives of Internal Medicine* for December, 1925, Bargen and Logan think that it would seem logical that some form of immunization against the diplococcus they constantly found offers hope for patients suffering from chronic ulcerative colitis. This has been attempted by preparing vaccines and vaccine filtrates according to the methods of Rosenow. Vaccines are prepared by heavily inoculating 8-ounce (236 cc.) bottles of 1-per-cent dextrose broth, incubating for twenty-four hours, centrifugating and making a thick glycerin suspension of the bacterial precipitate. To 24 cc. of sterile physiological sodium chloride solution is added 0.2 cc. of the glycerin suspension and 0.08 cc. of tricreosote, making a suspension of 2,000,000,000 dead bacteria for each cubic centimeter. This is allowed to stand in the ice-box over night. Vaccine filtrates are prepared by passing the original dextrose broth culture through a Berkefeld filter and adding 0.04 cc. of tricreosote to the sterile filtrate.

Of either material, 0.1 cc. is given as the initial dose. Patients who had slight systemic reaction with the small doses have obtained the best results. Recently they have used more filtrates, seemingly with better results. Injections are made subcutaneously every third day, beginning with 0.1 cc., the dose being increased by 0.1 cc. at each injection up to 1 or 1.5 cc. according to the patient's reaction to the toxin. In two or three weeks the diarrhea subsides and the patients improve, often very rapidly. Twelve patients have been dismissed clinically well and, on proctoscopic examination, at least much better; nine have improved; others have either not taken the vaccine or filtrate, or not enough of it to justify a statement with regard to results.

In conjunction with the vaccine treatment, they have, of course, continued their usual treatment of the disease. When the lesions are low enough to be reached by proctoscope, local treatment with 1:4000 acriflavine, one per cent mercurochrome, silver nitrate, lunar caustic and similar medicaments have been applied. Irrigations with hot water, warm physiological solutions of sodium chloride, argyrol, acriflavine 1:4000, and instillations of witch-hazel and bismuth in olive oil also have been used. An important adjunct to the treatment is the administration of tincture of iodine by mouth, and kaolin in doses of from 1 to 1.5 ounces. The nature of the action of the former is not definitely known, but a leucocytosis is often produced by its use. The kaolin presumably acts as an absorbent and may have an antiperistaltic action. They

have allowed these patients a rather generous diet, avoiding only such food as they have found to upset their bowels.

To sum up: A gram-positive diplococcus has been isolated in 80 per cent of cases of chronic ulcerative colitis. This organism has been obtained in pure culture from the early lesions, in an acute exacerbation of the disease, from the depths of chronic ulcers, and occasionally from distant foci elsewhere in the body. If searched for at the proper time when the lesions are active, they believe that the organism will always be found. By the intravenous injection of the organism, lesions like those in human beings have been produced in rabbits and dogs, the lesions in the latter approaching the chronic stage of the disease in human beings. The finding of this organism in distant foci and the production of acute lesions in the colon could account for the repeated exacerbations of the disease and the pathological findings of layer on layer of the granulation and fibrous tissue, replacing the colon mucosa.

From these studies it would seem that the hope of control of this disease lies in (1) removal of the distant foci of infection; (2) immunization in some form against the causative organisms; (3) local and topical application and irrigation; (4) the empiric use of drugs, such as tincture of iodine; (5) the administration of some absorbent like kaolin by mouth; and (6) a non-irritating yet general diet.

Lanolin in the Treatment of Extensive Burns.

In an editorial on this subject, the *Lancet* of December 12, 1925, tells us that "lanolin is the application which gives best results in the treatment of extensive and deep burns," in the opinion of Bellet, médecin-en-chef in the French navy. Serving in the great Saint-Mandrier Hospital at Toulon, he has had much experience of burns, especially in 1924, when he had under his care the thirteen victims of a cartridge explosion in a casemate of the *Patrie* in May and ten men scalded when a steam-pipe burst on board the *Courbet* in August. Other forms of treatment he considers unsatisfactory. Picric acid sometimes causes irritation and gives pain later, though it soothes at the first dressing. "Gomenolized" oil, the French equivalent for eucalyptized oil, drains away and leaves adherent dressings. Ambrine is good, but dressing takes a long time and healing does not occur so soon as with lanolin. Pure lanolin is a little irritating in summer, and about 20 per cent of vaselin should then be added. Its use for the treatment of burns has long been recommended by French surgeons and was fathered by Inspector Girard, who advised Bellet in the cases reported. The results recorded were satisfactory. Of the ten men from the *Courbet* who were scalded by superheated steam, three succumbed (on the first, second, and tenth days), but the remainder were cured in six weeks, and discharged without contractions, awkward adhesions, scars, or limitations of movements. The pain usually involved in dressings was noticeably absent and lesions on the head, face, and hands were sometimes cured within twenty days.

Bellet gives the following account of his procedure: At the first dressing the burnt surfaces and a wide area must be disinfected. The skin is always dirty, and compresses of spirit-soap will clean it. These are surprisingly well borne at first, and when they have done their work the burns are washed with much boiled water or weak permanganate solution. Blisters are opened, dead tissue is cut away—saving all the epidermis possible—and the wound is washed with normal saline and dried with sterile gauze. Finally, compresses soaked in sterilized lanolin with 20 per cent of vaselin kept fluid in water-bath are adjusted over the burns, and over them is placed gauze and absorbent cotton. Large dressings should be prepared beforehand, to save time and shock to the patient. Gloves, instruments, and dressings must all be sterilized as if for a surgical operation, and this must, of course, be done also at subsequent dressings. At first the applications

are changed daily, but there is no pain or bleeding, for they do not stick. After the dressing is removed, and any sloughs taken away, a washing with weak permanganate is followed by another with normal saline; the area around is cleaned with alcohol or ether; the whole is dried, and the dressing is reapplied. If all has been done well, the wounds are dry. The improvement under lanolin is said to be rapid; there is little discharge, and sloughs are quickly cast off. The wounds soon have rosy granulations, and in a week bluish islands of epithelium begin to appear and a healing edge to form. And there is generally no surrounding inflammation nor pus.

Indigestion.

McClure writes in the *Lancet* of December 25, 1925, that he would define indigestion as symptoms more or less connected with the upper abdomen and due to disorders of the stomach and intestines. Good functioning depends on two things, motility and secretion; but the stomach and bowels can either move too fast or too slowly and their secretions can be in excess or deficient, and all indigestion is due to one or other of these causes. The commonest initial symptoms are nausea and pain, varying between trivial and acute, in the upper abdomen. Pain in the epigastrium does not necessarily connote a severe lesion, but nevertheless calls for careful observation, since there is a tendency for pains seated in remote parts of the abdomen to be referred to the epigastric region. Pain caused by pressure on the pylorus is referred to the middle line, slightly to the right, near the xiphosternum; that of gallstones to the region of the ninth rib; and that of appendicitis to McBurney's point. A symptom of duodenal ulcer is severe gastric pain, and bad stomachache is also one of the signs of appendicitis, cervicitis uteri, and (in boys) phimosis.

Apparent indigestion may, therefore, have nothing to do with the stomach, and the real trouble is often extremely hard to diagnose. Even after a close clinical examination the physician has to seek the help of the radiologist and the chemist, and even these experts may not be much more accurate than the clinician. Since the symptoms of pyloric and gastric cancer can both be produced by minor conditions, the necessity for close observation and reasoning is obvious. Many physicians tend nowadays to rely far too much on aids to diagnosis and do not think enough for themselves. Incredible though it may seem, there are still practitioners who leave low corsets and underclothes in place when they examine an indigestion patient, and he has recently had three patients sent to him for indigestion, one of whom had an abdominal aneurism and two acute appendicitis. These were good examples of faulty examination. Moreover, *x*-rays can rarely tell the clinician more about a case of indigestion than he knows himself, and for some radiologists the barium shadow has, he thinks, a fatal fascination. They follow the advancing meal carefully down into the intestines and neglect the empty parts that it has left, and sometimes report free from organic disease a patient who suffers from functional dilatation of the stomach and duodenum and from pyloric spasm, whose cardia can be found by percussion right up to the fifth interspace well after the meal and who has been suffering from severe pain and tachycardia. Surgical interference would be disastrous to cases of this kind, and it is quite wrong to say that the physician cannot diagnose them.

Graver forms of indigestion are due to gross lesions. Gastric ulcer, for instance, is a serious and painful condition that sometimes leads to deformity such as the hourglass stomach. It often calls for surgical interference. In the many cases in which the trouble comes on without warning it is obvious that some factor is at work beyond mere irritation of the mucous membranes by unsuitable food. One man can eat and drink his fill for a long lifetime, another suffers from dyspepsia as a youth and dies early; one breaks down gastrically from worry and another escapes. In his opinion many of these cases suffer from a long stomach and a redundant colon from the

day they are born. A long muscle loses tone more easily than a short one, and a long stomach, although it gives no trouble under good conditions, loses its tone directly the system encounters strain. Dyspeptics are nearly always deficient in calcium and their vitality is low; they are easily exhausted and fall ready victims to infection, which has a severe and rapid effect on the alimentary system and is often the cause of ulcer. This type of constitution is badly equipped from the start, and when it comes under stress the sympathetic system is liable to get out of hand. This lack of nervous control may depend on a lack of endocrine balance. The trouble is sometimes a failure to assimilate certain substances and sometimes a failure to eliminate others. The bulk of the treatment must be medical and not surgical. Admittedly gross lesions should be handed over to the surgeon, but after the operation they should be returned to the physician so that he can correct the remaining faults and obviate the danger of a relapse.

The Products of Cinchona in the Treatment of Malaria.

In an editorial on this subject, the *British Medical Journal* of January 23, 1926, states that the Institute for Medical Research, Federated Malay States, has issued as one of its Bulletins (No. 3 of 1925) some further notes of great importance relative to the use of "cinchona febrifuge" and the alkaloids of cinchona in the treatment of malaria. The research, which was carried out by Fletcher, was directed to finding answers to two problems which confronted the Malay government: first, the advisability of employing "cinchona febrifuge" to supplement quinine; secondly, the policy of planting cinchona in Malaya. The causes that have led to the need for considering these problems and a scientific solution of them are detailed in this report, which is both informative and well written.

The term "cinchona febrifuge" has a different significance at the present day from what it had originally, fifty years ago. In 1874 it meant a mixture of the active principles extracted from cinchona bark; now it is the residue after removal of quinine—in other words, any mixture of the by-products of quinine manufacture which the makers choose to put upon the market. Since the action of bark in malaria is due to the crystallizable alkaloids contained—quinine, quinidine, cinchonine, and cinchonidine—the value of the "febrifuge" depends on the amount of these remaining. Its composition is, therefore, not constant, and it contains amorphous alkaloids, classed together as "quinoidine," which cause toxic symptoms, vomiting, and diarrhea. The four crystalline alkaloids have been proved to be equally serviceable in a dose of 10 grains twice daily; in smaller quantities quinine and quinidine are superior. The booming of quinine to the exclusion of the other alkaloids has led to the restriction of cultivation of cinchona to the yellow varieties, which give a larger yield of quinine, and these can be grown only in certain places, such as Bolivia and Java. The red bark contains about half the proportion of quinine, but does not need special soil and climate. There is no real shortage of quinine, as has been stated, but the drug is expensive owing to the cost of production and restriction of output.

At Kuala Lumpur two groups of men suffering from various forms of malaria were treated, the one with quinine, the other with "cinchona febrifuge." The former drug proved quite satisfactory in doses of 0.1 grain per kilo twice daily; by doubling the dose equally good results were obtained with the febrifuge. Larger doses of the latter were not necessary, and moreover caused toxic symptoms owing to the contained amorphous alkaloids, which are valueless as regards malaria. Cinchona febrifuge is, therefore, to be looked upon as an inexpensive method of treating the disease, but owing to the varying composition and the length of time required for making a difficult analysis for legal control, it is proposed that the government of the Malay States should purchase the production in bulk, have it assayed, put up in tablets, and issued authoritatively. It could

thus be used of standard composition for the majority of the people, while quinine could still be employed by those able to afford it.

The next investigation recorded by Fletcher is a comparison of quinine with quinidine sulphate. Seventy-two patients were divided into two groups, and were given twice daily 0.1 grain per kilo body weight of the respective drugs. The results are reported in detail, but may be summed up by saying that the immediate effect of the quinidine salt on the temperature and disappearance of the parasites was slightly better than that of quinine. Previous reports on the value of cinchonine had been contradictory; the discordant results are believed to be due to impurities in some of the samples used. As in the previous investigations, the patients were divided into two groups; one received 0.1 grain per kilo body weight twice a day, the other double this dose. In comparison with quinine the smaller quantity proved less effective in reducing the fever and clearing the peripheral blood of parasites; the larger doses, however, were as effective as quinine, and the alkaloid was not more toxic.

The upshot of this work is, therefore, to show that quinine need not be kept at the high price which it fetches at present; that there is no real world shortage of quinine; that in the other, neglected, alkaloids we have quite efficient substitutes; lastly, that from the red barks, which can be grown much more easily than the yellow, products are obtainable perfectly efficacious for the treatment of malaria inexpensively.

Some Simple Remedies.

The *Medical Review of Reviews* for December, 1925, states that *The Antiseptic* for September, 1924, has found the following remedy very efficacious for toothache—chloral hydrate, camphor, carbolic acid, and glycerin, each one drachm, mixed and applied on a pledget of cotton into the cavity.

For painful and swollen knees a mixture of magnesium sulphate solution and ammonium chloride is very serviceable. Apply locally on the knee with gauze saturated with it and plantain leaves or gutta-percha tissue placed over the gauze. A pint of tepid water is one of the most efficient, as well as cheap, antiphlogistic remedies to relieve any form of superficial inflammation, wherever it may appear.

A simple application to the bites of insects and bee stings is liquor ammonia one part and castor oil three parts, thoroughly mixed. It allays pain and promotes a speedy cure. It should be applied on a pledget of cotton.

The Treatment of Rheumatic Affections by Intravenous Injections of Sodium Iodide and Salicylate.

In the *Lancet* of December 19, 1925, PORTER tells us that for several years past he has been treating rheumatic and other affections by intravenous injection. Fifteen grains of (natural) sodium salicylate are boiled in a test-tube with 20 cc. of distilled water and 15 grains of sodium iodide added. He uses a 20-cc. Record syringe with eccentric nozzle and a sharp needle of No. 17 bore. The injection may be given in the consulting-room, and he claims there is usually no reaction. Occasionally there may be a slight feeling of coldness after about half an hour, which passes off in a few minutes. He has never seen thrombosis.

Improvement after injection is rapid and may be dramatic. In a case of acute sciatica within two minutes of the injection the patient could lift his thigh and walk across the room. Two days afterward there was still tenderness on pressure over a certain place in the course of the nerve, which disappeared after a second injection. On the fourth day the patient played a full round of golf. Some years ago he gave one injection to a doctor who had suffered from sciatica for six months; within half an hour the pain disappeared and never returned. Bernard, of Sidmouth, tells Porter that he has cured a chronic case of sciatica

of four years' duration with two injections, and that he is using this method largely for obstinate rheumatic affections. He (Porter) is treating two cases of osteoarthritis in this way at present and they are delighted with the relief afforded.

He thinks these drugs, when given by the mouth, undergo changes which prevent them from acting in the way they do when injected intravenously.

Quinidine in the Treatment of Auricular Fibrillation—Established, Paroxysmal, and Transient.

In the *Archives of Internal Medicine* of December 15, 1925, SMITH and CLARKE point out that for convenience cases of auricular fibrillation may be divided into three types: established, transient, and paroxysmal.

1. Established: In this type the abnormal rhythm has been present for more than two weeks and has shown no tendency to alternate with sinus rhythm, and the presence of the irregularity is not dependent on a transient contributory factor.

2. Transient: This group includes the patient showing auricular fibrillation in association with some transient factor, in which the arrhythmia tends to disappear spontaneously after the contributory factor is no longer active.

3. Paroxysmal: Of this type are those patients who usually show sinus rhythm but who have periodic attacks of auricular fibrillation lasting from a few minutes to several days.

Instances of transient auricular fibrillation, according to their definition, have been frequent in their experience. However, the principal contributing factors, in the order of their frequency, have been:

1. Thyroidectomy.
2. Toxic adenoma of the thyroid.
3. Major surgical operations, such as cholecystectomy.
4. Acute lobar pneumonia.
5. Certain miscellaneous cases, which have included exhaustion from extreme overexertion, acute alcoholism, starvation and dehydration in association with acute cholecystitis.

As is well known, auricular fibrillation develops frequently after thyroidectomy. It commonly occurs the first or second day after operation and constitutes a disturbing but not necessarily serious complication. Its occurrence is an indication for digitalization of the patient, a procedure that is generally sufficient to increase his comfort, the irregularity of the pulse disappearing spontaneously in twenty-four or forty-eight hours. In cases in which the arrhythmia persists into convalescence, it is, as a rule, easy to produce a reversion of sinus rhythm with quinidine.

They have had 61 per cent success in the production of normal rhythm from auricular fibrillation by a one-day plan of quinidine administration. This compares favorably with the results obtained in a large number of cases already reported (56 per cent).

The patient with mitral disease who has had the arrhythmia for a relatively short time is most likely to revert to normal rhythm after quinidine, and in such patients the resulting regular rhythm will likely persist longer than in the arteriosclerotic or degenerative type.

Patients of the arteriosclerotic or degenerative type who have been irregular for long periods are often more difficult to restore to normal rhythm by quinidine; and such rhythm if produced is apt to be of relatively short duration.

Patients with coarse electrocardiographic auricular waves are more easily rendered regular by quinidine than those who show fine auricular waves.

One death occurred in association with quinidine therapy in their patients.

In the mitral disease group, quinidine should be used only by those patients without marked cardiac hypertrophy and dilatation who have had the irregularity for but a short time and who have not had congestive cardiac failure.

In the degenerative group, they are inclined to believe that the use of quinidine is not justified.

In no case of established auricular fibrillation should this drug be used unless it is apparent that close coöperation is going to be possible between the patient and the physician, and unless hospital admissions and readmissions can be readily arranged if thought necessary.

In transient auricular fibrillation, quinidine was found indicated only when the arrhythmia persisted after the disappearance of the transient causative factor. In cases associated with hyperthyroidism, quinidine apparently should not be used until six weeks after thyroidectomy.

In those cases of paroxysmal auricular fibrillation not due to hyperthyroidism in which the paroxysms were frequent, quinidine administered prophylactically, in doses of from 0.2 to 0.4 or 0.8 gm. daily, was found to be of the greatest value in lengthening the interval between the attacks and in shortening the paroxysms that did occur.

In the treatment of individual paroxysms, quinidine need be used only in rare instances when the paroxysm tends to be prolonged.

Quinidine was not found necessary in daily dosage unless the paroxysms occurred more often than once in two weeks.

The chief value of quinidine was found in the treatment of frequent paroxysmal auricular fibrillation when not associated with hyperthyroidism. It has many dangers and an extremely limited field of usefulness in the established cases, and real benefit of any considerable duration is derived in only a small proportion of these.

The Value of More Thorough Rectal Examination.

In *Southern Medicine and Surgery* for December, 1925, SMITH states that pain is the most frequent symptom which causes the patient to seek a physician's aid, and its character of onset and relation to the bowel movement often give clews to the diagnosis. Sharp, acute pain, or the cutting, burning or stinging quality coming on with the stool or following it points invariably to the anal region. Certain darting pains occurring at intervals between stools also point to an origin in the anal region. Pain of a throbbing character indicates some inflammatory condition which may be perianal, perirectal or integumentary abscess. Pain of a dull character may be caused by hemorrhoids, prolapse, polypus, or fistula. Ulcers causing a burning sensation may be confused with burning from acid stools due to some metabolic process. Pain, dull in character and shooting down the legs, may mean cancer. Prolapse will cause a dull pain in the back. Fistula causes pain when walking. Pain referred to other portions of the body, as down the sciatic nerve into the inguinal region, or to the urethra or scrotum, is frequently caused by pathologic conditions in the rectum, which cause no local pain whatever.

Bleeding, above all other symptoms, should call for a complete examination of the anus, rectum, and sigmoid. It usually occurs during defecation, but may occur during the intervals. The character of the blood should be noted, whether liquid or clotted, pure or mixed with pus, mucus, or feces. Fresh blood discharged from the anus is usually from a local hemorrhage, but may have descended from the sigmoid colon. As a rule, the darker the blood, the higher in the bowel the source. Rectal hemorrhage, however slight, should never be taken for granted as diagnostic of hemorrhoids or any other disease, but should call for a complete examination. The local diseases of the rectum which may cause hemorrhage are internal hemorrhoids, prolapse, proctitis, malignant growths, stricture, ulceration, fistula, chancroid, chancre, polypi, fecal infections, and villous growths. In many cases of so-called idiopathic anemia, if a careful rectal examination be made, a pathologic condition will be found which will explain the etiology.

Constipation is one of the most common conditions afflicting the human race. Some have put it that every other man and every woman is constipated. No patient who comes into the office of the average physician is turned away more quickly with a

single prescription, or some drug, than the constipated individual. Because of thoughtless, careless medication by practitioners who are either "too busy" or because of their lack of knowledge of rectal examination, many patients are driven to self-medication by means of cathartics and patent medicines and have been lost to the legitimate practitioner of medicine.

Anal fissure is responsible for more acute pain than any other lesion of its size occurring in the human body. The fissure is an elongated ulcer, usually at the posterior commissure of the anus. It usually occurs singly, and when more than one is present it is an evidence of the presence of tubercular, gonorrheal or syphilitic infection, or is caused by some wasting disease. The poor blood supply in this region, together with the action of the sphincters keeping the parts in motion, tend to prevent healing. The ulcer becomes chronic, the skin becomes indurated, and a fold is formed in such a way as to produce a tag known as a "sentinel pile," which is the first thing to attract attention on examination.

Not infrequently physicians have been led into the error of taking the patient's word for the fact that he is suffering from hemorrhoids causing the symptom of pain at stool and hemorrhage, when the symptoms are caused by fissure.

Fistulæ are very common in the anorectal region, and being of many varieties, classified according to location, are very easily overlooked except on a thorough rectal examination. Many fistulæ are the result of chronic cryptitis which is allowed to go on to abscess formation and never recognized in the early stages. Practically all fistulæ have their internal opening in the anal canal between sphincter muscles.

Hemorrhoids, which is the most common disease of the anorectal region, is also the most frequently self-diagnosed and self-treated condition affecting this region. So often practitioners are consulted by patients who seem to think they have "bleeding piles" and without examination are given the wrong treatment, and as a consequence are driven to some quack, or so-called "pile specialist" who advertises in the daily press —because they believe that members of the medical profession do not treat rectal diseases.

The diseases of this region deserve just as much thoroughness in examination and treatment as does the eye, ear, nose and throat, and, in fact, patients are relieved of more pain.

The Use of Acidified Milk in Infant Feeding.

In the *Boston Medical and Surgical Journal* of December 31, 1925, JOHNSON reminds us that Marriott in 1919 reported good results by feeding marasmic infants buttermilk with the addition of karo syrup up to 10 or 12 per cent. This method later received favorable comment by different observers. In 1923 Marriott reported his results with the use of lactic acid to acidify milk with karo added. His original formula was as follows: Cow's milk was sterilized by boiling five minutes, the milk was then cooled, and to each pint one drachm of lactic acid U. S. P. was slowly added from a dropper with gentle stirring and then two tablespoonfuls of karo syrup.

Johnson has during the past few months had very satisfactory results by using lactic acid with Dryco, where this was not well tolerated without the acid. One point which he believes should be stressed with the general practitioner who has many infants under his care is that an infant much under weight requires a much higher caloric feeding than a normal infant of the same weight. With this in mind one would not be tempted to change the formula very often simply because the infant fails to gain, the digestion being good, but he would slowly increase the food value until such time that a gain is possible.

One should use lactic-acid milk knowingly, varying it as the need of the individual infant indicates. The fat may be lowered by removing some of the cream, or the sugar or starch may be varied as to kind and amount used. He does not want to give the impression that acidified milk is a panacea for infant feeding as it is not well received by all infants. He is still using

whole-milk dilutions, boiled with carbohydrate added as a general rule, with satisfactory results, but does feel that a knowledge of the use of lactic-acid milk is of great assistance.

Transfusion of Blood.

In an editorial on this subject, the *Lancet* of January 23, 1926, stated that the establishment of blood transfusion as a therapeutic measure in civil practice in England dates only from the beginning of 1919, when war conditions were relaxed and those who had learned the technique of transfusion were returning to their practices. During these seven years many thousand transfusions have been performed for a variety of conditions, and there is no reason for doubting that the results have given general satisfaction. It must be admitted, however, that on the medical side transfusion has definite limitations. Probably the great majority of medical transfusions have been done for pernicious anemia, a disease which is never cured by this treatment though it may be held at bay for varying periods up to several years. The necessity for repeated transfusions is in itself confession of partial failure.

The second prime indication for transfusion is hemorrhage from a gastric or duodenal ulcer. The dictum that "patients never die as a result of hemorrhage from a bleeding ulcer" may still gain some credence, but is gradually giving way before post-mortem room evidence. The fallacy of supposing that transfusion will encourage hemorrhage by causing too great a rise in blood-pressure is also losing ground. Transfusion has, in fact, proved its claim to be regarded as almost a routine measure in hemorrhage from acute and chronic ulcers. In the first group it is more likely to assist in stopping bleeding than to encourage it, and accelerates the patient's recovery; in the second it tides the patient over a grave crisis and makes possible the performance of the necessary operation. Transfusion is also of proved value in surgery in combating the shock caused by any severe operation, such as partial gastrectomy or disarticulation of the thigh at the hip-joint, though it has become less often employed in the first of these examples as improved methods of anesthesia have come into use.

Another group of patients who may be definitely benefited by transfusion includes those suffering from chronic intoxication by pyogenic or other microörganisms. The results of its use as a specific agent in these cases or in septicemia by means of the principle of "immuno-transfusion," introduced by Sir Almroth Wright and his coworkers in 1923, does not seem quite to have fulfilled the hopes based upon the laboratory work which suggested it; but the general effects of an ordinary transfusion have certainly been good. Opinion concerning the other less frequent indications for transfusion, such as melena neonatorum, hemophilia, purpura hemorrhagica, and pneumococcal peritonitis, has not undergone any striking alteration.

Transfusion has probably been more freely used in hospital practice than outside, owing to the presence in hospitals of greater facilities for obtaining apparatus and blood donors, but with a little forethought and organization these factors do not present any real difficulty in any circumstances. Knowledge of the possible dangers due to the incompatibility of certain "blood groups" has been widely diffused, and misadventures attributable to this cause have been almost unknown. Probably very few transfusions have been performed without the preliminary tests which are known to be necessary. Doubt has several times been cast upon the precise truth of the statement that human beings can be rigidly divided into four groups, but although laboratory evidence may have fostered this doubt, clinical results have always tended to dispel it. In the department of technique no very striking advances have been registered, though several modifications of existing methods have been brought forward. The issue of the *Lancet* which we quote contains two contributions bearing on this side of the problem, and these will be seen to be

to some extent in opposition. In the United States, the home of transfusion and the scene of many original investigations of the problems connected with it, discussion has always centered upon the relative merits of the use of so-called "whole blood" and of citrated blood. The advocates of "whole blood" have maintained that the use of citrate is to be held responsible for the minor post-transfusion reactions which have often been observed, and that it should therefore be entirely abandoned. Advocates of citration have then demonstated that the reaction follows in almost the same proportion of cases whichever method has been used.

The truth of the matter is difficult to seize, but the probability seems to be that the reactions are due to more than one obscure factor in technique and to peculiarities in individuals even in one blood group. The importance of the matter may easily be exaggerated, for the reactions are scarcely ever harmful, and some observers believe that the therapeutic result is better when a reaction has occurred. A statement that, in an occasional instance, a reaction has proved fatal is difficult to substantiate, for other possible explanations cannot be excluded, and general experience suggests that some other factor was probably responsible. The position, however, is arguable, and Platt, of Sheffield, now makes a plea for the routine use of defibrinated blood on the grounds that the technique is simple and that no reactions ever occur. He regards it as an established fact that the minor reactions are all due to citrate. Citrated blood has proved, however, to be, in some hands, so entirely satisfactory for general purposes that it will not be lightly abandoned in favor of another method. The citrate has also a somewhat paradoxical value as a hemostatic agent when introduced into the circulation, and its continued use may be advocated on this ground alone.

The second contribution, by Moll, of Leeds, seeks to introduce a modification of the usual citrate apparatus, in which he uses a "Record" syringe fitted with a two-way tap. The same idea is incorporated in the apparatus used by Platt. The point of difference lies in Moll's attitude toward the use of citrate, for far from questioning the propriety of employing it, he adds to the blood more than twice as much citrate as is usually considered necessary. Clearly no general agreement upon the pros and cons of citrate for transfusion has yet been reached. Disagreement, however, is not likely to prove so fierce in England as it has done in America, for specialization has not yet resulted here (England) in the evolution of the "transfusionist," whose sole interest lies in the practice of this specialty.

Respiration in Anesthesia: Control by Carbon Dioxide.

In the *British Medical Journal* of December 19, 1925, HENDERSON states that the essentials of good anesthesia are rapid induction, uniform concentration of vapor, and rapid termination. In the drop method of administration the vaporization of a liquid anesthetic is often irregular. A more reliable and more uniform method of producing the vapor in proper concentration in air is desirable and is afforded by many of the forms of apparatus introduced recently.

The use of a controllable amount of rebreathing is also advantageous in the maintenance of a nearly uniform concentration of the anesthetic vapor and of oxygen and carbon dioxide.

An almost complete control of respiration is afforded the anesthetist by the use of carbon dioxide mixed with oxygen. By its use rapid induction and termination of anesthesia and any desired volume of breathing and depth of anesthesia are at his command.

It is not the amount of anesthetic in the body which determines anesthesia, but that in the nervous system. The amount in the nervous system at all times follows closely the concentration in the arterial blood; and the concentration in the arterial blood is in turn determined by the volume of the breathing and the concentration of the

anesthetic vapor in the air inhaled. Thus control of respiration is the essential element in the control of anesthesia.

The use of carbon dioxide as the means of controlling respiration applies also to asphyxia of the new-born, alcoholic intoxication, carbon monoxide asphyxia, and related conditions.

The restoration of an approximately normal content of carbon dioxide in the lung air and in the blood and tissues of the body at the termination of anesthesia probably tends strongly to prevent the development of a post-anesthetic pneumonia. It is also a means of restoring a nearly normal acid-base balance in the blood.

Novasurol and Other Diuretics in Cardiac Edema.

In the *British Medical Journal* of January 16, 1926, LAMBIE tells us that after the administration of novasurol an interval of about three to four hours elapses before the commencement of the diuresis, which reaches its height between the eighth and twelfth hours, and almost entirely passes off at the end of twenty-four hours. The dose is 0.5 cc. every second or third day. Analysis of the urine shows that the constituents, whose elimination is most markedly increased, are the water and the chlorides, while the urea is increased only to a very small extent. Controversy has centered around the question as to whether novasurol increases the urine through an action upon the kidneys, or whether the diuresis is to be ascribed to some extrarenal action. Thus it has been suggested by Saxl and Heilig and others that the drug brings about a diminution in the affinity of the tissue colloids for water and chloride which diffuses into the blood, causing a hydremia, and to the latter the diuresis is ascribed. Evidence regarding the dilution of the blood has been conflicting, but the observations of Crawford and McIntosh seem to reconcile the discrepancies in the findings of other investigators. They found that dilution of the blood, as determined by the protein content of the plasma, corpuscular volume, and hemoglobin percentage, occurred during the period immediately preceding the onset of diuresis, while during the actual diuresis the hydremia disappeared and the blood became more concentrated. The diuresis, therefore, could not have been due to the hydremia, since the height of the diuresis sometimes coincided with increased concentration of the blood. The same observers also showed that in the dog an increased chloride percentage in the plasma occurred along with the primary dilution, but that during the diuresis the chloride rapidly fell. They did not, however, note any early increase in the chloride of the blood in man.

In the diuresis brought about by the purin diuretics, which are believed to act by increasing the permeability of the cells lining the glomerular tuft, thereby diminishing the resistance to filtration, there is an increase in the output affecting chiefly the chloride and water, but as the output of chloride increases the percentage falls. After small doses of novasurol, as also after the administration of calomel, similar curves are obtained; but with larger doses of novasurol there may be an increase, not merely in the total elimination of chloride, but, as Crawford and McIntosh have shown, an increase in the percentage, and this in spite of the fact that the percentage of chloride in the plasma was normal or diminished. This would seem to suggest that a change had taken place in the renal threshold for chloride, analogous to that which occurs with respect to glucose under the influence of phloridzin. The normal function of the cells lining the renal tubules is actively to reabsorb water and chloride from the glomerular filtrate, and if we suppose that they share with the cells of the other tissues a diminished affinity for these substances, there would be no difficulty in understanding why both renal and extrarenal factors should not be concerned. Further observations upon the changes in blood volume by more trustworthy methods than those hitherto employed are called for, while a

study of the chloride threshold and the blood flow through the kidney is necessary in order further to elucidate the problem.

Digitalis produces no diuresis in the healthy individual, but it increases the secretion of urine in cardiac failure through augmenting the output of the left ventricle and improving the circulation in the kidneys and other tissues. The diuretic action is most marked in those instances in which digitalis has the most striking effect in improving the efficiency of the heart—for example, in auricular fibrillation—and is less pronounced in cases in which the influence upon cardiac action is less conspicuous, as in aortic disease and interstitial myocarditis. With the increased efficiency of the circulation the blood flow and capillary pressure in the glomeruli of the kidneys return toward the normal, and more fluid filters off from the blood plasma through the glomerular membrane. If, at the same time, the improved nutrition of the tissues leads to the reabsorption of edema, the diuresis may be enormous.

If, in spite of the administration of digitalis, the output of urine be low, diuretics of the purin series may increase the volume of urine. When effective they would seem to be the most desirable diuretics to employ, as the mechanism of their action is not such as to involve the performance of work and an increased oxygen consumption in the kidneys. They appear to act, as already indicated, by increasing the permeability of the glomerular membrane, and perhaps, as Richards and Schmidt have observed, by increasing the number of active glomeruli. Considering their mode of action, it is not surprising that they should sometimes fail, especially when the glomerular capillaries are dilated from chronic venous stasis and the permeability of the glomerular membrane is altered as a result of anoxemia, so that albumin appears in the urine.

When the purin diuretics fail urea may still cause diuresis. Urea filters through the glomeruli, but is reabsorbed with difficulty from the urinary tubules. Consequently the urea in the tubules, in virtue of its osmotic pressure, opposes the reabsorption of water by the tubule cells, so that a greater proportion of the water which filters through the glomeruli escapes in the urine. Thus, the volume of urine may be increased even when the rate of filtration is lessened, as in cardiac failure. Urea, however, undergoes concentration in the tubules, the tubular cells having to reabsorb water in opposition to the osmotic pressure exerted by the urea. But the process of concentration involves the performance of work, together with an increased oxygen consumption, in an organ which is being poorly supplied with oxygen. Urea, therefore, cannot be regarded as the ideal diuretic to employ, though no harm appears to result from its use, over short periods at any rate. The large doses administered in the cases above cited are not necessary in most instances, but when it is remembered that the normal output of urea, resulting from protein catabolism, is about 25 grammes a day, the extra amount necessary to make an appreciable difference must be considerable, as ordinary dosage goes. When urea is no longer effective, novasurol may yet be capable of producing a large diuresis. There is no evidence that this action is obtained at the expense of damage to the kidneys. The drug is, therefore, a useful addition to our armamentarium.

The Quartz Lamp.

In the *Boston Medical and Surgical Journal* of January 28, 1926, MacDonald points out that there is quite a lot of misunderstanding about this instrument and its uses. Briefly the quartz lamp consists of a fused quartz container holding mercury. An electric current passing through the mercury gives rise to ultraviolet rays. The instrument may be air- or water-cooled. The air-cooled lamp has a wider range of usefulness in dermatology than the water-cooled.

In summarizing the advantages of ultraviolet light treatment, it is his opinion that when we need desquamation we can find it in this modality. Personally he has found it of little value in acne vulgaris. He considers it excellent in generalized psori-

asis, pityriasis rosea, seborrheic eczema of the body, pruritus and winter itch. In the latter disease it is extremely valuable. In alopecia areata, by its stimulant action, it is of great value. Ulceration in any form responds most favorably to the quartz light. After reducing the elevated edges of indolent ulcers, he applies the quartz light and then applies Hebra's ointment over gridiron strapping. Varicose ulcers can also be strapped if there is no surrounding eczema. Bazin's disease and tuberculous ulcers also heal under quartz light therapy, but in these cases he gradually exposes the whole body to the light in addition to local intensive treatment of the ulcer.

As regards dosage, he begins with a short exposure of a few minutes—at a distance of twenty inches. Every alternate day the light is brought closer to the skin and the time increased.

Insulin Administration.

In the *British Medical Journal* of January 16, 1926, NIXON insists that when a case of true diabetes develops a serious complication or intercurrent disease, or when a surgical operation becomes necessary, the last thing that must be thought of is treatment by fasting or the slightest degree of undernutrition. The patient must receive a diet which contains an adequate amount of protein and calories. A useful rule for calculating these requirements is to allow 1 gramme of protein and 35 calories per kilogramme of body weight. Several ways of determining these requirements have been suggested, but nearly all of them are based either on the body surface or weight of the patient as he is. In his opinion there is a risk of underestimating the real requirements by weighing or measuring an unduly wasted body. He prefers to reckon how much the patient ought to weigh if in good health; for this purpose age, sex, height, and the general tendency of the patient's family should be taken into consideration. Having decided on this basis approximately how much the patient should weigh, he prescribes a diet which shall contain 1 gramme of protein and 35 calories per kilogramme of the assumed weight.

He uses Woodyatt's formula for the proportions of protein, fat, and carbohydrate —namely, that the fat in the diet shall be equal to twice the carbohydrate plus half the protein. On this formula the minimal diet for a weight of 50 kilos is: fat 139 grammes, carbohydrate 57 grammes, and protein 50 grammes. It is advisable to start immediately with the full adequate diet; there is no time when infection is present or an operation is about to be performed to commence with diets of the "ladder" type. The patient must be well fed from the start, and sufficient insulin must be given to keep the blood-sugar at a safe level. It is not a bare subsistence the patient requires, but an allowance (of carbohydrate at any rate) which would nourish him if in good health and give a reasonable margin for combating the infection or facing the shock of an operation. Nixon states in the after-treatment of operation cases that the surgeon is permitted to give the patient as much glucose, and in such a manner, as he would do if the patient were non-diabetic. Subsequently, as the surgeon modifies the diet, the insulin is adjusted to keep pace with it. But there must be no diminution of carbohydrate because the patient is diabetic. The insulin must be pushed in surgical emergencies as fearlessly as in the dreaded emergency of coma. For the treatment of coma the method recommended by Campbell should be followed:

Patients in diabetic coma who have not received treatment require larger doses of insulin. As speed is essential and the rate of action of insulin is only doubled by taking ten times the dose, he commonly uses 100 units of insulin intravenously as the initial dose. [This is a questionable dose unless one knows the blood-sugar.—ED.] Most of the coma patients are dehydrated and fluid must be supplied liberally. Some of this may be given intravenously as 10-per-cent glucose solution, at a rate not greater than 10 cc. per minute. If the pulse rises ten beats per minute, discontinue the injection. Normal saline or 5-per-cent glucose may be injected inter-

stitially and given per rectum by the Murphy drip method after a cleansing enema has been given. Many patients difficult to rouse will respond by automatic swallowing movements when a teaspoonful of fluid is poured into the mouth. Except by direct injection into the circulation it is doubtful if too much fluid can ever be administered to a diabetic in coma. Warmth must, of course, be provided. The room should be warm, and warm blankets and hot-water bottles used. Circulatory stimulants should be begun early, digitalis and coffee by mouth or by rectum being the most satisfactory stimulants, pituitrin and ether being used for more acute emergencies. In his opinion alkalies in moderate doses, 15 to 30 grammes $NaHCO_3$, are of value when administered by mouth or by rectum in 5-per-cent solution. The intravenous injection of sodium bicarbonate solution is to be employed with caution as it may induce cardiac dilatation and failure. Hypoglycemia must be avoided and carbohydrate must be available to replace the defective fat metabolism as well as to burn up the ketones already produced. This is provided by giving the patient approximately 1 gramme of sugar for each unit of insulin. The use of a retention catheter and testing the urine for sugar each hour will give ample warning of a deficiency of available carbohydrate.

The Treatment of Tinnitus Aurium.

In the *Lancet* of January 16, 1926, MOLLISON tells us that in the patients with objective signs examination must be made of (*a*) the external auditory meatus, (*b*) the tympanic membrane, (*c*) the Eustachian tube.

The external auditory meatus must be examined for wax, foreign bodies, polypi, osteomata; treatment of these conditions if found is obvious.

The tympanic membrane must be examined for signs of middle-ear affections. The membrane may show signs of acute inflammation, redness or bulging, or recent perforation; in these conditions the tinnitus is usually described as pulsating or blowing. Subsidence of the acute condition usually leads to cessation of the tinnitus. There may be an exudative middle-ear catarrh, as shown by slight changes in the color of the membrane and by a hair-like line on the membrane. This line is concave upwards and is made by the surface of the fluid in the tympanum and moves with movement of the head. With this condition the tinnitus complained of is of water moving, or, in more chronic cases, of creaking, as of "two pieces of leather being rubbed on one another."

Treatment consists in inflation of the Eustachian tube and instillation of drops of glycerol acidi carbolis; if unsuccessful the membrane is incised under strict asepsis or antisepsis, and the fluid sucked out with Siegle's speculum or blown out by means of the Eustachian catheter; removal of the fluid immediately removes the noise.

The membrane may show old-standing perforations or scars of perforations or atrophic patches, but treatment of these conditions locally is usually useless as far as tinnitus goes, since they indicate chronic infections and adhesions.

It has been long recognized that the rarefaction of the air in the external auditory meatus often diminishes the noise, and when such is the case vibratory massage of the drum is well worth carrying out and should be practiced for about five minutes on three or four occasions. Retraction of the membrane is very often associated with tinnitus in its severest form.

The Eustachian tube is vitally important; any catarrhal condition of the upper respiratory tract may cause catarrh of the Eustachian tube; this condition results in retraction of the membrane, and it is impossible to dissociate conditions of the membrane and abnormalities of the tube.

As to treatment, it is to be recalled that inflation of the tube by means of the catheter in recent cases may lead to immediate cessation of the noises; this proceeding may need repeating on three or four occasions. Inflation of air alone is not always successful, but good results may be

obtained by inflation of warm air, vapor of chloroform, or ether; or again by inflation of a few drops of a 5-per-cent solution of methyl salicylate in albolene through the catheter. In obstruction of the tube the passage of a Eustachian bougie gives excellent results. In recent cases these local measures meet with a considerable degree of success; but when the middle-ear catarrh is chronic local measures often fail, and from a treatment point of view the cases must be placed in the next class to be considered.

Tinnitus with deafness includes a large number of cases in which there is no objective lesion amenable to local treatment, in which the Eustachian tube is clear, the membrane normal, and no sign of pharyngeal or nasopharyngeal infection; broadly speaking, the cases are those of internal ear deafness and otosclerosis. The term internal ear deafness is given to a very large group of cases with very varying pathologies. From the point of view of treatment cases of chronic middle-ear catarrh must be included.

Whatever the cause of the deafness, and it is often quite unknown, treatment of the tinnitus runs on similar lines: drugs and general advice with encouragement. The best drug is no doubt dilute hydrobromic acid, and it should be given in full doses of one drachm three times a day in water; it may be combined with small doses of potassium iodide; small doses of quinine (gr. j, t. d. s.) help other cases. The condition of the blood-pressure is of some help; in cases of high blood-pressure doses of trinitrin often give good results. On the other hand, with low blood-pressure ergot should be given and digitalis may well be combined with dilute acid hydrobromic. Thyroid extract gives encouraging results, especially in cases about the menopause. Pilocarpine nitrate, gr. 1/12, twice a day in a mixture, is sometimes of value. Luminal, gr. 1/2, three times a day, may be given and the doses carefully increased if need be.

The general advice deals with the patient's health and habits. He should avoid excess of alcohol and tobacco; indeed, the use of tobacco should be stopped. Some people improve with change of environment, in others life at a high altitude causes cessation of the noises. Regular exercise and treatment of constipation should be insisted on. Many patients have a dread, often kept secret, that the noises are going to affect the brain, and reassurance helps them to support what is a depressing burden, especially when the noises are so severe as to prevent sleep. It has been suggested and carried out with success, that patients should keep a very loud-ticking clock near their beds, so that their attention may thus be distracted from their head noises. Hypnotics should be given to these severe cases. It is these very obstinate cases, so distressing that the victims threaten suicide, which have led to the suggestion of operation on the cochlea or eighth nerve. Unfortunately the few operations that have been carried out have not justified themselves, since the tinnitus has continued in patients who survived the operation.

Syphilis of the Skin.

MacDonald in the *Boston Medical and Surgical Journal* of January, 1926, says that the treatment of syphilis is so well known that he mentions only a few of the salient and rather important points.

Despite everything, there are still members of our profession who believe that by cauterizing a chancre the disease can be eradicated. Every penile lesion, no matter how trivial, should be examined over and over again by means of the dark-field microscope for the spirochete. If the history is not suspicious and the spirochetes are not found, the lesion may be regarded as a soft chancre. So omnipresent is syphilis that it behooves us to be on our guard, and when we meet with unusual and recalcitrant lesions to think of syphilis, and to do a dark-field examination and a blood Wassermann. One is surprised at the number of patients at the Massachusetts General Hospital Syphilis Department who say they had been treated outside first by cauterization without any further investigation.

Regarding the various types of eruption in secondary syphilis, it is a well-known

fact that syphilis can mimic any other skin disease. Any one who heard Stokes's address at Atlantic City this year will realize this. He showed a fine series of lantern slides differentiating syphilis from some well-known skin diseases. Only recently a woman was referred to him with an eruption which clinically was lichen spinulosus. Her past history rang uncertain, so he did a Wassermann. It was strongly positive. He wonders how many fairly mild secondary syphilitic eruptions are diagnosed as urticaria, scarlet fever, etc.

It is axiomatic that syphilis needs long-continued treatment. Before discharging one's patients it is a wise precaution to do a lumbar puncture. The consensus of opinion, especially amongst Kryle and his coworkers in Vienna, is that the third year is the best time for this procedure. If the result shows an increase in lymphocytes and an increase in globulin, more treatment is needed. If this is not done, the patient is a potential metasyphilitic. More treatment may save him from the horrors of tabes or general paresis.

MacDonald uses arsphenamine whenever possible. It may be necessary to use the less toxic neoarsphenamine, or sulpharsphenamine. Mercury is also being used in the gray oil intramuscularly. It is, however, being replaced quite considerably by bismuth. His preference is for bismuth. It is less toxic and the clinical results from its use are superior. It is put up in small ampoules and is injected into the gluteal region.

He finds it a wise precaution to step very warily in old cases of syphilis. He would caution against commencing treatment with the arsenicals in cardiovascular syphilis. They tend to release a flood of endotoxins, and violent reactions and death have been reported. It is a safe measure, therefore, to open treatment in old cases of syphilis with a preliminary course of potassium iodide and mercury by mouth.

Tryparsamide is used at the present time in the treatment of tabes, general paresis, and syphilitic meningitis. It is especially valuable in the last two types.

Before concluding, he calls attention to sulpharsphenamine. This drug can be used by the intramuscular route where the patient's veins are poor, or where the patients are children. Stokes of Philadelphia speaks highly of its efficacy by the intramuscular route. The author does not care to give it intravenously. He has had too many sudden reactions with it.

In conclusion he would urge that we always carry with us the thought that syphilis is a protean disease and respects neither age, sex, nor social standards.

Bronchial Asthma in Children and in Young Adults.

In the *American Journal of Diseases of Children* for January, 1926, Rowe well says that certain asthmatic patients are relieved by climatic change, especially those living in a high, dry atmosphere. The explanation of such relief may rest in getting away from the specific protein that is causing the asthma, or may be in the resulting dryness of the mucous membranes which makes the absorption of inhalant proteins difficult. However, asthma does develop in such regions, and many asthmatic patients obtain no relief from change of climate. He feels that climatic change for the relief of asthma is no longer necessary. In fact, a few patients whose condition was uncontrolled, whom he sent away for relief, obtained none, and came back for further help. Physicians need not advise patients to change climate because of asthma, since such changes may lead to serious financial difficulties, and asthmatic subjects should be controlled in their own communities.

It is recognized by all conservative physicians that operations on the nose and throat rarely cure asthma. Walker, in 1918, advised against such treatment, and many other physicians, including Crowe, have published similar opinions about the control of asthma by surgery. No surgical operations should be performed on asthmatic subjects except for general health, and then seldom before the protein sensitization

problem is thoroughly understood and under control. Allergy undoubtedly is responsible for much infection of sinuses and tonsils.

Such infection will often improve under proper allergic treatment, and only that which will not so improve, or which is acute and endangers life, should be treated with surgery.

Many disturbances of the respiratory tract in childhood and in young adult life are due to allergy. Asthma occurs frequently during these years and is often mistaken for bronchitis. Careful testing and retesting with a large number of all classes of proteins known to cause asthma has given positive reactions in 95 per cent in his series of 110 patients. Asthma has been shown to be due to animal emanation, food, and pollen proteins in a large percentage of the cases. The importance of pollen sensitization as a cause for asthma in the first two decades of life must be especially emphasized. Surgery on the nose and throat is contraindicated in asthmatic patients, except for the improvement of general health. He asserts it is unnecessary to change climate to control asthma. With steady cooperation of the patient, he has obtained satisfactory results in 91 per cent of this series of asthmatic subjects.

Surgical and Genito-Urinary Therapeutics

Treatment of Gonorrheal Epididymitis by Turpentine Injections.

COWAN (*Urologic and Cutaneous Review*, November, 1925) observes that under conservative treatment may be mentioned rest in bed; the application of a suspensory large enough to include the entire scrotum and snug enough to relieve the tension on the cord; the application of guaiacol or ichthyol ointment; hot Epsom salt soaks; an ice-bag which though it may relieve the pain may also lower the vitality of the tissues and promote suppuration; puncture of the epididymis, which may relieve pain immediately.

At best these measures are tedious and often disappointing, and the patient may be disabled for several weeks.

To accelerate the speed of his recovery we must resort to other measures. These aim to increase the general or local immunity of the body tissues by stimulating the production of leucocytosis or of bactericidal substances.

Theilhaber shows how the injection of specific or non-specific protein in the body, by causing a localized leucocytosis at the site of injection, calls on the organs and tissues from which the leucocytes originate for an over-production. The leucocytes by chemotaxis rush to the scene of action, as shock troops, to attack the invading organisms. On this theory are given injections of vaccine or of sterile milk, with varying results. Failure to cure is due to the fact that stimulation, resulting from the injection of these foreign proteins, is insufficient to arouse the leucocyte forming tissues.

On this theory is based the injection of turpentine in the treatment of epididymitis, with which the author has had considerable success.

To ascertain the therapeutic value of turpentine injection, one hundred cases of epididymitis were subjected by Wren and Tenenbaum to that treatment exclusively. An emulsion of turpentine in olive oil (20 per cent) was injected upon the pelvic bone fascia at intervals of two days. The injections start with 0.5 and are increased to 1 cc. of emulsion given at two-day intervals for a minimum of six injections.

The injections were followed, in the majority of cases, by analgesia and involution of the scrotal swelling. In many instances a single injection sufficed to relieve pain in from six to twelve hours. On the average, three to four injections were necessary.

The authors' experience, based on over two years of careful clinical observations, leads them to conclude that turpentine by injection deserves a prominent place in the treatment of epididymitis.

Turpentine by injection is not a new remedy and has been recommended at various times for suppurative processes, including furunculosis.

With the technique used by Wren and Tenenbaum, in a series of fifty cases, Cowan has had satisfactory results; a cessation of pain after the first or second injection, and a rapid involution of the swelling. No necrosis occurred, the patients declaring the injections to be painless. One case of double epididymitis, of two weeks' duration, yielded to these injections, but the epididymitis recurred upon the patient's return to heavy labor.

A valuable feature of these injections is the feasibility of starting massage of the infected vesicles, from which the epididymitis originated, within a short period, in some cases as early as two weeks after resolution of the swelling. Eradication of this vesicular infection is absolutely necessary to prevent later recurrence of epididymitis.

Operative and Postoperative Complications of Subtotal Thyroidectomy.

HEINECK (*Medical Sentinel,* November, 1925) observes that surgical complications, avoidable or unavoidable, of minor or major importance, are due in part to the patient's unfavorable physical condition at the time of the operation, to the use of a method of anesthesia not adapted to the case at hand, to lack of proper correlation of the anesthetic to the technique, to the operator's lack of technical skill, experience and judgment in surgery of the neck, etc. Owing to the study given to disease of the thyroid in recent years, these accidents are now better recognized, better understood, and better managed.

As to hemorrhage, if this occurs during operation it should be under the surgeon's control. There may be bleeding shortly thereafter because small arteries and venules incident to low blood-pressure may not bleed during the course of the operation, and not having been secured by ligature may later give rise to hemorrhage. The need of avoidance of coughing and vomiting is obvious. In case of secondary hemorrhage the wound should be opened widely, blood clots removed, and the bleeding vessels secured. The salines, or even transfusion, may be indicated if bleeding be profuse. Injury to the recurrent laryngeal nerves inflicted during operation, if both sides are involved, constitutes a serious complication. It causes a permanent aphonia and later obstructive dyspnea. Death from deglutition pneumonia has been noted. As a protection to himself the surgeon should require a preoperative mirror examination of the larynx. The recurrent laryngeal nerves and the parathyroid glands are most surely avoided by leaving the region they traverse entirely unmolested and by not removing the posterior mesial lower part of the thyroid gland. Moreover hemostatic forceps should be applied accurately; there should be gentleness in the insertion of sutures.

Postoperative tetany due to removal of the parathyroid glands is infrequent. Interference with the blood supply of these organs makes them functionless. If a glad be accidentally removed it should be transplanted at the close of the operation, preferably beneath the remaining thyroid lobe. Symptoms may appear any time from six hours to three or four months after operation. The condition is almost always manifested by circumoral pallor, by a tight glossy appearance of the skin of the forehead, nose and face, by a sensation of stiffness in the fingers, by carpopedal spasms, etc. It is difficult for the patient to raise his fingers to his mouth or to hold anything. The lowered calcium content of blood serum or plasma causes exaggerated nervous irritability. These symptoms pass off in a few hours or a day, possibly after one or two doses of morphine, or the condition gradually progresses until the contractions involve the muscles of the hands and arms; sometimes the contractions become general.

Postoperative tetany is treated by giving calcium lactate 20 grains every four hours

until relief is obtained. It may be given orally, by enema, subcutaneously and, exceptionally, intravenously and in larger doses, if needful. Transplantation of human parathyroids has also been successful. These transplants may be placed in the left abdominal wall between the peritoneum and the rectus muscle. Parathyroid products are ingested, and morphine, chloral hydrate and magnesium sulphate, the latter subcutaneously in 25-per-cent solution, are employed, apparently with benefit. The patient is fed largely on milk.

Air embolism characterized by a peculiar whirring or churning sound synchronously with the cardiac systole is either promptly fatal or of no large consequence. It is avoided by careful surgery. Large veins should be doubly ligated before being opened. If it occurs the wound is at once flushed with normal salt solution, the foot of the table elevated, and the wounded vein or veins clamped or ligated.

Tracheal collapse occurring in an air tube which has been badly kinked and atrophied by the pressure of an enlarged thyroid cannot occur if the tracheal rings are normal. It causes obstructive dyspnea amounting in some cases to asphyxia and may be fatal. When it occurs a sharp tenaculum is inserted in each side of the collapsed portion of the tube, and it is drawn forward and may be fastened by catgut sutures to the surrounding tissue; or the resected goitre stump may be secured to the under surface of the sternocleidomastoid or omohyoid muscles, thus securing tracheal dilatation and preventing recurrence of the collapse. Tracheotomy is rarely indicated. The entire thickness of the tracheal wall should not be perforated by instruments.

Recurrence of goitre rapidly diminishes with increased experience upon the part of the surgeon. The amount of tissue to be left should be the functional equivalent for the normal gland.

After operation the patient is advised to use boiled drinking-water, orange juice, and to have foci of infection, if they exist, suppressed. Minute doses of iodine given for one year after operation seem to be serviceable.

The frequency and severity of postoperative hyperthyroidism are lessened by observance of the following precepts: Operate as rapidly as consistent with the patient's safety and the completeness of the operation, secure perfect hemostasis, avoid squeezing of the gland and all needless traumatizing of tissue, make ample provision for drainage, and see that oozing blood and effused thyroid secretion escape easily and do not remain in contact with the wound surface.

Drainage relieves tracheal compression due to postoperative hemorrhage and prevents hematoma formation. After all goitre operations, give large quantities of normal salt solution subcutaneously and rectally. By this practice, the absorption of thyroid secretion is lessened and general elimination is increased. For high temperature, the cold pack is most serviceable.

In postoperative myxedema there is impaired memory and intelligence; apathy, somnolence, great disinclination to effort. An edematous swelling of the skin develops and the patients complain of feeling cold. In young individuals the growth is stunted. Hypothyroidism is characterized by a definite reduction in the basal metabolism; the metabolic rate is always lower than that of normal individuals of the same age and sex.

The successful management of these cases is one of the noteworthy triumphs of organotherapy. Institute treatment at the first appearance of symptoms. Make up the deficit of thyroid secretion by thyroid treatment. In directing and guiding thyroid administration, metabolic rate determinations are of the greatest importance. Bring the patient's metabolism to normal and ascertain the dose necessary to keep it there.

As to avoidance of postoperative infection it is advised that all goitre operations should be drained for about forty-eight hours, thereby preventing the symptoms and sequelæ due to retained thyroid secretion and extravasated blood. The treatment of postoperative infections occurring in this region is that of infections in general.

Postoperative pneumonia, owing to its

unfavorable prognosis, always gives the clinician the greatest concern. The pain in the wound hinders expectoration and lung aeration. In the etiology of pulmonary complications, injury of the recurrent laryngeal nerve or nerves is a paramount factor. In old individuals, this condition is frequently hypostatic in type and fatal in outcome. The avoidance of prolonged anesthesia, and unnecessary exposure, denudation and rotation of the trachea, and especially care not to injure the recurrent laryngeal nerves, have practically eliminated postoperative pneumonia as a danger in goitre operations.

The treatment of postoperative pneumonia is, as yet, purely symptomatic.

In dislocating large goitres, the nerves supplying the pharyngeal muscles may be traumatized. Dysphagia of several days' duration always follows goitre operations; it is usually manifested by pain on swallowing. Sometimes after operation the patient chokes when trying to swallow fluids. The fluid flows back into the nose or drops into the larynx and trachea. Combat this by turning the patient on his face with his head over the edge of the bed; place the glass on the floor or on a low stand and let him drink through a tube uphill. All nourishment will have to be given in this manner until normal control of the pharynx is regained.

The Influence of a Glycerin Emulsion of Testes and Adrenals on Tuberculous and Senile Patients.

KORENCHEVSKY (*Lancet*, Nov. 21, 1925), on the basis of an extensive study of the literature bearing on these matters, decided to administer preparations of sexual glands plus adrenals to tuberculous patients with symptoms of deficiency of the internal secretions which these glands normally should elaborate. The emulsion employed was given by mouth and made from perfectly fresh glands, the preparation being 1 part of gland to 2½ parts of glycerin. One part of ground tissue contained 1/8 to 1/10 adrenals and 7/8 to 9/10 testes. This was administered in ½ to 2 teaspoonful doses given twice a day. This emulsion was used in a number of clinics and in several large hospitals. In some cases of eunuchoidism symptoms of deficiency of internal secretion of the glands was slightly improved. The duration of the treatment was three to five months. There was no marked betterment in the general condition, but a psychological study showed improvement from that standpoint, from which the author concludes that observations made on 70 tuberculous patients and 14 seniles indicate practically no efficiency in the method of oral administration of preparations of testes and adrenals.

Major Urological Operations Under Regional Anesthesia.

LOWSLEY (*Boston Medical and Surgical Journal*, Sept. 3, 1925), in his preoperative preparation, gives his patients liquids by mouth or rectum immediately before operation. He regards preliminary narcosis as entirely unnecessary. Procain is his drug of choice; its maximum dose being one grain for each 100 pounds of body weight. Usually one-per-cent solution is satisfactory; at times one-half per cent; occasionally two-per-cent solution is used. It is freshly made, and sterilized by boiling just before use. Adrenalin is not added since it increases the drug's toxicity. The sacral, parasacral and paravertebral routes are employed.

Of 279 cases it is noted the anesthesia was good in 230. There were 125 perineal prostatectomies, all anesthetized by the sacral and parasacral method, with poor or only fair anesthesia in but 12 cases.

The author concludes that operation upon every organ in the genito-urinary system is practicable under regional anesthesia. The supreme advantages are that the patient may take fluids up to, during, and immediately after operation; the blood-pressure is not elevated as it is in any type of inhalation anesthesia, or depressed as it is in the spinal method, therefore there is very little bleeding during the operation; the anesthesia persists for many hours after admin-

istration, thereby eliminating pain and frequently rendering the administration of opiates unnecessary as a postoperative procedure.

The supreme disadvantage is that what is injected cannot be extracted, therefore it must be given slowly and one must stop at the slightest evidence of toxicity. That great group of lung complications including "ether pneumonia" is eliminated. The convalescence of the patient begins when the last suture is tied, and is shortened very considerably. The mortality rate is reduced to a minimum.

Regional anesthesia is the work of the professional anesthetist and not of the surgeon.

Endo-aneurismorrhaphy.

MATAS (*Surgery, Gynecology and Obstetrics*, December, 1925), in an article on this subject, and as the result of a large experience with the method of operation which he devised, holds that when operating the surgeon should not obstinately insist upon reëstablishing the continuity of a damaged artery by juggling with complicated, hazardous, uncertain, and adventurous methods. It is for this reason that the operation designated "ideal," and which consists in excising or resecting the sac and then suturing the stumps of the divided vessel by end-to-end arteriorrhaphy, with or without the interposition of venous grafts, does not figure in Matas' statistics. This will do only for recent pulsating hematomata. The ideal operation is that, in reality, which saves the patient and his limb, while ridding him of his aneurism. In the presence of an aneurism, developed in one of the great arteries near the heart, we must reflect a long time before deciding to act. It is then that we should be eclectic, selecting that procedure which is most clearly indicated by the condition of the patient and of the limb.

In the young, otherwise healthy subjects, suffering from purely traumatic aneurisms, the operator may go far in the pursuit of the ideal. But in the aged and in those vitiated by diseases, whose aneurisms are only a proof of their general arterial degeneration, one must be practical, and the theoretical, technical, and physiological ideal must be subordinated to the primordial consideration of the saving of life.

The surgeon should choose the simplest means by which he may suppress the disease. It is in adopting this principle that Matas always begins an attack on the innominate, the subclavian, the carotid, the iliac, and the iliofemoral aneurisms; by first occluding the main artery with an aluminum band or, preferably in innominate and left subclavian aneurisms of the first or intrathoracic portion, by tape ligature, without interfering directly with the sac.

It is admittedly a serious matter to apply a ligature upon an innominate, or a subclavian, especially at the origin of these vessels, but the procedure, difficult as it is, is a far less dangerous or risky undertaking than an attempt to obliterate or extirpate the aneurismal sac at the same sitting.

In probably 80 to 85 per cent of these cases the simple occlusion of the main artery is sufficient to obtain a cure of the aneurism. If a relapse follows, it is then time enough to obliterate or extirpate the sac.

Remote Sequelæ of Rectal Implantation of the Ureters for Exstrophy.

RICHEY (*Archives of Surgery*, September, 1925, Vol. II) observes that exstrophy of the bladder occurs once or twice in every 50,000 births. It is commoner in males than in females. The absence of the anterior bladder wall is associated usually with rudimentary penis and undeveloped testes. There is a constant leakage of urine and usually excoriation of the surrounding skin. Most of the exstrophies die from renal infection before reaching the age of twenty.

The customary surgical procedure for this really intolerable condition is the implantation of a rosette of that portion of the bladder wall containing the ureteral orifices into the rectum. In 1909 Buchanan had collected 98 cases in which such operations

had been performed. Eleven died subsequently of renal infection and 64 were well at the time of publication; 15 of these had survived for a period between six and twelve years.

Richey reports the case of a boy three years old operated on by the Bergenhem operation. Twelve years later this boy exhibited left-sided pyonephrosis and perinephric abscess, for the relief of which operation was performed. Two years after this a similar lesion developed on the right side. Four days after drainage the patient died. On necropsy the boy, then over sixteen years old, did not appear to be more than six. There was extensive destruction of renal tissue. The ureters were greatly dilated and filled with pus.

The case is unique in many ways, and when it is viewed in its entirety, the wonder is not that these patients die of ascending renal infection, but that some are able to withstand it for so long a time. With the finding of such a ready communication between rectal cavity and ureteral orifices, the case, too, suggests that the time-honored altercation as to the best method of rectal implantation of the ureters with a view to preserving sphincteric control is of more academic than practical importance, and that, in exstrophy of bladder, the surgeon finds himself between Scylla and Charybdis, where, of the evils presented, he must choose the least.

Treatment of Fracture of the Femur.

WHITMAN *(New York Journal and Record,* Vol. CXXII, No. 4, 1925) comments on the conclusions of Koenig, who believes that a transcervical fracture of the neck of the femur is practically incapable of repair. For these reasons Koenig advocates not only removal of the head predestined to necrosis, but, with German thoroughness, the neck also, in order to forestall its absorption. The projection of the trochanter having been cut away an ovoid extremity is formed, which when placed in the acetabulum assures secure support. He states that with the aim of improving function, he has on the cadaver, though not as yet on a living subject, transplanted the trochanter to the outer side of the femoral shaft, as in the reconstruction operation, of which, apparently, he has never heard.

Sir Astley Cooper, cited an authority by Koenig, admitted that the primary cause of non-union of the intracapsular fracture of the femur as of the patella was the impossibility of keeping the broken bone ends in apposition. From which it has been taught and widely practiced that an impacted fracture of the femoral neck must not be disturbed. Originally the diagnosis of impaction was dependent upon interpretation of the physical signs; at present it is based on a misinterpretation of *x*-ray pictures. Its actual influence on the result is well illustrated by the statistics under consideration. In twenty-four of the thirty-seven cases treated by indifferent methods the fracture was classed as impacted, and yet there were but two good results.

Deformity after fracture of the neck of the femur, whether the fragments are apposed or not, indicates separation of the fractured surfaces, and contact, which in this instance is essential to repair, can be restored only by its correction.

If Koenig's statement that intracapsular fractures were incapable of repair were generally accepted there would be, practically speaking, in the future as in the past, no treatment for cases of this class, since primary operation would be practicable in but few cases. Furthermore, the larger proportion of fractures at the hip are near the base, yet in this class, in which there has been little question of repair, function, in the sense of primary correction of deformity and adequate after-care, has been utterly neglected.

The first essential for progress therefore is to discard all the teaching of the past, which, because it is based on inadequate treatment, serves no purpose other than to uphold incompetence and neglect.

Fracture of the neck of the femur should be treated like other fractures with the aim of assuring the opportunity for functional repair, and since there is but one

method adequate to correct deformity and to fix the fragments securely, a method which is from the life-saving standpoint far more conservative than neglect, and when properly applied, far more comfortable than any treatment that enforces dorsal recumbency, the actual question at issue is of the competence of the surgeon to apply it.

Use of Antitetanic Serum in Tetanus.

HARRISON *(International Journal of Surgery,* December, 1925) states that the value of antitetanic serum in the treatment of this disease divides itself into two main features: First, as a prophylactic or its power to prevent the infection from developing; secondly, its ability as a therapeutic or curative measure when the disease has declared itself.

That it will, when properly administered, greatly diminish the incidence of the disease is no longer debatable. This has been abundantly established both in civil and military wounds. Furthermore, it is equally well established that in the cases that develop in spite of prophylactic treatment the disease runs a much milder course and the mortality is very low as compared with cases that have not had prophylactic treatment.

It is also noted that the earlier the prophylactic dose is given after the wound is received the better the results. In wounds that last over a long period, and especially those which are severely infected, the immunizing dose should be repeated two or three times at seven- to ten-day intervals.

Undoubtedly prophylaxis is far more important than therapeutics in the treatment of this disease. In considering the prophylactic treatment special stress is laid on the proper care of wounds at the earliest practicable moment.

Harrison shows by his figures that wounds properly handled from the beginning are subject to tetanus infection so rarely as to make it almost negligible. And yet we know that some types of wound are so subject to the infection as to make the administration of prophylactic serum mandatory.

It is extremely difficult to say just what wounds shall and what shall not have prophylactic serum. That is a matter which requires much judgment and knowledge of wounds.

In a general way it may be said that wounds occurring in those who work about stables, wounds produced by explosives, crushed wounds that are ground full of street dirt, and all other wounds in which the surgeon is uncertain as to the thoroughness of sterilization, should have prompt prophylactic treatment.

No very clear case can be made out for the value of antitetanic serum as a therapeutic measure, nor can we as yet say what is the best mode of administration. A careful study of the available literature fails to prove the sure value of any particular route or dosage. Up to the present the evidence seems to indicate that the result depends much more upon the virulence of the infection and the susceptibility of the subject than upon any special treatment. But it is equally certain that we have no better treatment than serum, and therefore it should be used.

As to the routes, the evidence seems to indicate that it is best to combine several routes, namely, intrathecal, intramuscular, and subcutaneous or intravenous.

Primary Healing of Abdominal Wounds.

GOFF *(Surgery, Gynecology and Obstetrics,* December, 1925) studied the results, in regard to prompt or delayed closure of 3000 abdominal incisions, made by nine surgeons, covering a period of three and a half years; 2755 of these incisions were classified as clean at the time of operation. Most of the cuts were longitudinal or median ones. The remainder were transverse, suprapubic, paramedian, McBurney, or inguinal. The cuts were mainly of the intermuscular type rather than those characterized by muscle split. The method of skin preparation was a green-soap washing of the entire abdominal skin twelve

hours before operation. This followed by washing with sterile water, and after that with alcohol, in turn followed by ether; the skin surface then being covered with sterile gauze. Not less than two hours or more than four hours before operation the skin was painted with 3½-per-cent tincture of iodine and covered with fresh sterile gauze. A second application of 3½-per-cent iodine was made to the abdominal skin a few moments before the operation. There was careful protection of cut tissues by gauze clamped in place and not removed until the operator was prepared to suture the skin. Two methods of closure were used: one, layer closure by catgut, reenforced by removable tension sutures of silk; the other through-and-through removable silk sutures of all layers excepting the peritoneum. This latter method, elaborated by Goff, is illustrated and described in detail.

Clean cuts to the number of 1645 were closed by the catgut layer method; 1110 by the removable silk suture method. Graphs are given showing the chronological incidence of faulty wound union in 2755 clean abdominal incisions. These bring out the fact that one surgeon has closed 367 incisions by the conventional catgut method with a faulty union of 9 per cent. The second surgeon, who used a similar method in 270 cases, has met with an incidence of faulty union of 7.8 per cent. In the work of a third surgeon, who has also used a catgut closure in 220 incisions, there has been an incidence of faulty union of 14.3 per cent. The part of the graph which deals with the work of the next five surgeons is of special interest in that it shows a decided reduction in the incidence of faulty union upon the abandonment of catgut and the adoption of the removable silk suture method of closure. In the case of the fourth surgeon there has been a reduction of faulty union of approximately 100 per cent, while it has been greater in the work of surgeons 5, 6, 7, and 8. It will be noted that the conversion from one type of closure to the other has occurred at a different time in each instance. Surgeon 9, who has employed only the removable silk suture method of closure in 261 incisions, has met with an incidence of faulty union of 3 per cent. This graph brings out very clearly one very important point, namely, that with all other factors remaining constant, the adoption of the removable silk method of closure has, in the work of all surgeons who have used both methods, invariably resulted in a very decided reduction in the incidence of faulty union in the abdominal wound.

Graph 2 shows clearly the relative incidence of faulty union in clean incisions closed by absorbable and non-absorbable suture material. Special attention is called to the fact that the incidence of faulty union in incisions closed by the removable silk suture method has been in every instance lower than the lowest incidence in catgut closures.

Graph 3 shows the relative incidence of the causes of faulty union in 2755 clean abdominal incisions. In practically every instance the incidence of defective union has been lower in the wounds closed by non-absorbable suture material. The one exception is found under the heading "Wide Separation of Tissues," in which case the figures are based on three accidents of this sort in the work of surgeon 4 and one in the work of surgeon 9. The graph shows clearly that the total average incidence of faulty union in clean abdominal incisions from all causes has been 4.3 per cent in wounds closed by non-absorbable suture material, while in wounds closed by absorbable sutures the total average incidence of faulty union has been 12.1 per cent.

A final examination of the six graphs reveals facts which substantiate Child's theory that absorbable suture material, such as catgut, used in the closure of the abdominal incision, constitutes the important and avoidable predisposing cause of infection in the tissues about the incision, especially in the more or less avascular fatty layer, which possesses lower powers of resistance to infection than the fascia and skin which lie on either side of it. Furthermore the figures show that in the hands of the same surgeon, with all factors excepting the character of suture ma-

terial remaining constant, the conventional catgut closure, which has been so generally adopted as the method of choice, gives results inferior to those which follow the closure of the wound by removable non-absorbable suture material such as silk.

From an economic view-point faulty union in the abdominal incision is a costly and time-consuming complication to both patient and hospital. In the series of 3000 cases under consideration there has been a total loss of 3086 hospital days due to defective wound union. It is obvious that no other postoperative complication with which the abdominal surgeon meets is responsible for a loss of time comparable to that caused by faulty union of the abdominal incision made and closed by conventional methods.

Physiological Method of Treatment for the Common Injuries Met With in the Region of the Knee-joint.

ATKINS (*Journal of the Royal Army Medical Corps,* December, 1925) notes that during the last phase of the Great War some 300 cases came under his care marked "Permanent Base" with chronic synovitis of the knee.

The integrity of the knee-joint depends on the normal condition of its ligaments. These are so placed as to prevent abnormal movement, and are sufficiently strong to compose practically the whole strength of the joint. The muscles controlling the joint exert their pull in a direction opposed to abnormal movement, and so, by relieving the ligaments of a certain amount of strain, are valuable aids in strengthening the joint. It follows from this that if from any cause the muscles are lacking in tone, or there is any loss of control over these muscles, the ligaments are more likely to be injured and the joint so much the weaker.

All injuries produce a common set of symptoms. These are hyperemia and swelling of the synovial membrane and increased local temperature. Increased fluid is excreted into the joint. There is also atrophy of the muscles controlling the joint, the knee extensors being chiefly affected; the extensor fascia femoris is also involved, but to a less degree. This is a reflex atrophy, and occurs in the muscles around any injured joint. It is the first symptom to appear and the last to disappear. This atrophy commences within a few hours of the receipt of the injury, and in chronic disease of the knee can be traced as far as the cells of the cerebral cortex.

No cases can be considered as cured until the extensor group of muscles is again working efficiently. If the muscles are not normal before the knee is again subjected to strains the ligaments are deprived of a valuable source of protection. Many cases of recurring synovitis are seen in such cases as a result of slight trauma, and owing to the neglect of this point each fresh trauma increases the atrophy, and so a vicious circle is established.

The fluid can only be absorbed from the joint at the same rate as the overstretched fibrous capsule returns to normal. It is important that this fluid should be got rid of quickly, for as long as there is tension in the joint, little if any impression will be made on the muscles. Occasionally one sees a case in which the fluid in the joint refuses to absorb. As soon as this is recognized the joint should be aspirated.

If we produce as big an active blood-supply around the joint as is possible, the fluid will in most cases be rapidly absorbed, repair to any damaged structure will take place rapidly, and the muscles will be got into as healthy a state as possible.

To bring about this increase in the blood-supply the muscles around the joint must be exercised, as the arteries of any structure on which rest is enforced diminish in caliber, in which case the blood-supply will be diminished. At the same time the leg must be treated in the "corrected" position, which in all cases involves surgical rest. Muscular action must, therefore, be obtained without at the same time producing joint action. This can easily be done by means of contractions produced by an electrical stimulus.

A very valuable method of stimulating the circulation is by means of contrast baths of hot and cold water.

Five minutes twice daily is ample; at the end of three or four days the time may be doubled; it should never exceed fifteen minutes. A large area of the thigh and leg must be included; the baths must not merely be applied to the knee. To aid the absorption of fluid from the joint, a tight bandage is applied to the knee for three or four hours following this treatment.

The exercises which the patient performs are as follows: He contracts the extensor group with the knee in the extended position; this produces an upward lift of the patella. The large mass of muscle on the posterior aspect of the joint must also be exercised. To do this the patient is instructed to place the sole of the foot of the same side as the injured knee on the dorsum of the sound foot; he then forces down the good foot into a position of plantar flexion by contracting the calf-muscles of the injured leg, using as a resistance the dorsiflexors of the sound ankle.

By these means an active blood-supply is insured to the joint, and there is a rapid disappearance of symptoms. In cases of injury to ligaments a back-splint is used for ten days, or such time as any local tenderness remains. The patient is kept in bed until all the fluid has disappeared from the joint. If there is a definite injury to the cartilage, after the knee has been straightened the back-splint is worn for a month—this allows the cartilage to become rebedded if it is at all possible for it to become so.

In all chronic cases the knee should be put through its complete range of movement with the patient anesthetized. This also applies to any recent case which appears to be slow in getting better. Small adhesions do form which retard the cure, and it is essential that these be broken down.

In cases which show a strain of a tendon at its insertion treatment must be given with the knee slightly flexed, and when the patient is allowed up the heel of the boot should be slightly raised. This position must also be adopted for any injury to the infrapatella pad of fat, as when this structure is enlarged it may be nipped in the position of full extension.

No case should be sent back to duty until the muscles are normal. This often takes some time, but it is not time wasted. If a case that has been discharged as cured be readmitted to hospital, either the injury is entirely a fresh one and has no connection with the previous injury, or else there is some definite injury to the cartilage, a loose body is present, or there is a hypertrophy of the synovial membrane in the form of synovial fringes. All these latter conditions demand operation.

If the treatment is carried out faithfully, the number of cases of readmissions to hospitals or recurring injuries to the knee will diminish and the accident of a dislocated cartilage will be realized to be less frequent than it is supposed to be.

In the author's experience cases of injury to the knee make up a very large proportion of all surgical cases admitted to hospital, and it is presumed that the same occurs at all hospitals. If this is so, it shows that the present-day methods of treatment of these injuries should be improved. Therefore any rational treatment might with advantage be given a fair trial.

Local Anesthesia in Goitre.

TIFFIN (*Northwest Medicine*, December, 1925) thus sets forth the advantages of local anesthesia:

Local anesthesia will be a success to each individual surgeon in proportion to his ability to use it and understand it. Quoting W. J. Mayo on this point: "Heretofore few surgeons have given the time necessary to master the method of administration, and the details have been carried out by assistants equally unqualified."

Local anesthesia increases the speed and efficiency of the operator, thus aiding in relieving shock.

Local anesthesia is of great value in eliminating the danger of injury to the recurrent laryngeal nerve. During a local anesthesia the patient is not continually rebreathing particles of mucus-laden infection. There is much less load and responsibility on the general circulation and the

viscera as a whole, thus eliminating to a large extent acidosis and the possibility of infections.

The patient can be very quickly returned to his room without the nausea and well-known discomforts of a general anesthesia. There is a great deal less danger from hemorrhage, due to coöperation on the part of the patient during the operation.

Injuries to the arms, back and other locations and burns from hot sponges do not occur, or certainly rarely, with local anesthesia.

Jackson in the same journal notes that although the novocaine-morphine-scopolamine method of anesthesia proved very successful in operations for adenomatous goitre and for the incipient cases of exophthalmic goitre, there were certain disadvantages to its use in advanced cases of the latter type. These patients, always apprehensive and high-strung, were subjected to undue shock and stimulation by even the trivial ordeal of ligation. In such cases nitrous-oxide-oxygen analgesia proved useful and together with ethylene-oxygen was rapidly becoming the anesthesia of choice. There are, however, certain objections to these anesthetics that are obvious to the surgeon.

An additional strain is imposed upon the heart, kidneys, liver, and other important organs that may have been already severely damaged.

The tendency toward postoperative hyperthyroidism is increased.

Postoperative tracheitis and pneumonia are more apt to occur.

Postoperative vomiting, a factor of importance in exophthalmic goitre, is a frequently annoying sequel. The venous congestion, occurring especially in the use of nitrous oxide, causes the operative field to be more soiled, and the danger of injury to important structures, such as the recurrent laryngeal nerves, is thus increased.

The tendency to postoperative hemorrhage is greater.

The discovery by Plummer of the efficacy of iodine in the treatment of exophthalmic goitre at once proved a great boon to the advocates of local anesthesia for thyroidectomy. The clinical improvement in these patients, following the proper preoperative preparation with iodine, was such that it became obvious that they would tolerate a local anesthetic as favorably as patients with non-toxic goitre. Within forty-eight hours after the administration of iodine the extreme restlessness, nervousness and emotional irritability so typical in these cases begin to disappear; the distressing palpitation and tachycardia are relieved, and quiet sleep takes the place of insomnia.

The tendency to hemorrhage in operations performed under local anesthesia is practically eliminated because at the completion of the operation the patient may be made to cough and strain, and thus any bleeding vessels that have escaped ligation may be detected. Finally, injury to the tissues is minimized because the surgeon and assistants must work carefully and gently.

All unnecessary noise must be eliminated from the patient's room after the first hypodermic of morphine, ¼ gr., which is given one hour before operation. Fifteen minutes later scopolamine, 1/300 gr., is injected. Vaselin cotton is placed in the patient's ears, the eyes are covered, and head towels applied. In extremely nervous persons, a second hypodermic of morphine, 1/6 gr., may be required before operation is begun.

Half an hour after the hypodermic of morphine and scopolamine the patient is brought to the operating room and prepared. The position of the patient on the operating table is one of the most important points in the successful completion of the operation. The patient's shoulders should be on a level with the top of the table, so that the head falls back far enough to bring the neck into a convex position. After the field of operation has been prepared, injection of the gland is begun. The infiltration method is preferable to the technique of blocking the cervical plexus by the lateral direct route, because it requires less time and is more readily and safely carried out by intern assistants.

Usually 200 to 400 cc. of a warm solution of 0.5-per-cent novocaine, containing no adrenalin, is employed. First, a central wheal is made in the midline, and from this

area the entire operating field is quickly injected, an anesthetist working on each side. After the initial wheal is made there is little or no pain. The subcutaneous tissues and sternohyoid and sternothyroid muscles are injected until the perithyroid zone is anesthetized. Bilateral injections at the border of the sternomastoid muscle, with subcutaneous and subfacial injections in the area of the skin incision, complete the anesthesia of the interior surface of the gland. After the gland is exposed both poles are injected at once. This will practically eliminate the sensation of pain that may be caused by clamping the superior thyroid pole and vessels.

A review of operations performed for goitre at the Jackson Clinic from October, 1922, to October, 1925, shows a total of 465 thyroidectomies and 75 ligations or stage operations. Since June, 1924, no ligations or stage operations have been done. During the past twelve months 21 thyroidectomies have been performed with a mortality of 0.9 per cent; one death was from pneumonia and the other from embolism on the tenth day. This last series includes 49 cases of toxic adenoma, 109 cases of nontoxic adenoma, 60 cases of exophthalmic goitre, one case of intrathoracic goitre, and two cases of carcinoma. Local anesthesia was employed in all but six cases.

Technique of Transfusion.

MASON (*Northwest Medicine,* December, 1925) thus describes a simple method of transfusion:

The apparatus for the syringe method consists of four 20-cc. syringes, from which the nickel caps have been removed, two medium-sized Unger needles, two small rubber constrictors, and three basins of solution. The basin next to the recipient is filled with 2-per-cent solution of sodium citrate. The middle basin is filled with distilled water. The basin next to the donor is filled with normal salt solution.

The donor and recipient are placed on parallel ward carriages about four feet apart. Blood is taken from the donor's right arm and injected into the recipient's left arm. The syringe is then handed to a nurse, who stands behind the table on which the basins are placed. The piston of the syringe is immediately pulled out (this is the reason the nickel cap is removed) and washed in turn in sodium citrate solution, distilled water, and normal salt solution. The piston is then inserted and the syringe is ready for use again.

The method is simple. There are no unusual devices which may get out of working order. Veins can be used repeatedly. Whole blood is used, without the addition of sodium citrate. It is scarcely ever necessary to open a vessel. The amount of blood to be given can be measured accurately. When necessary this procedure can be performed at the bedside. Blood transfusion by this method has given fewer reactions than when the citrate method was used.

Cancer of the Uterus and Its Treatment by Radiation.

In the notes of 149 cases of cancer of the cervix admitted to the Memorial Hospital for treatment in 1924 there were but five unmarried women, from which HEALY (*American Journal of Obstetrics and Gynecology,* December, 1925) deduces that untreated and ulcerating cervical lacerations are major predisposing causes. He reports on many cases, and concludes that enough statistics on end-results of treatment of carcinoma of the cervix by irradiation are now available from reliable observers and clinics throughout the world to indicate that hysterectomy is no longer necessary.

Evidence is accumulating to indicate that hysterectomy for carcinoma of the cervix even when combined with pre- or postoperative irradiation, or both together, may be a serious handicap to the patient obtaining the full benefit of ray therapy.

There is at present not sufficient evidence to justify the treatment of adenocarcinoma of the corpus by irradiation alone in cases favorable for hysterectomy.

Evidence would seem to justify the careful, continuous, intensive treatment of all cases of carcinoma of the cervix with combined radium and roentgen therapy.

Prevention is better than cure; much

more attention should be paid to the cure of cervical lacerations and inflammations.

Subtotal hysterectomy should not be done in the presence of a diseased cervix.

In subtotal hysterectomy for fibromyoma the specimen should be opened and the endometrium carefully inspected before the final decision to leave the cervix is made.

Surgery has definitely failed in the treatment of carcinoma of the cervix. Irradiation therapy is not ideal but represents a real epoch in the treatment of the disease.

Extrauterine Pregnancy.

STEIN (*American Journal of Obstetrics and Gynecology*, December, 1925) reports on 106 cases. Bearing on diagnosis he states that in about 25 per cent this is faulty. Of 106 cases 81 were correctly and 25 incorrectly diagnosed. Of the last 1000 gynecological admissions there were 53 ectopic pregnancies. The greatest difficulty lay in the differentiation between pyosalpinx and ectopic.

As to the method of lessening diagnostic errors, there is no gynecologic condition in which a good history is so essential. In fact it is the most important premise upon which to base a logical conclusion. The trite expression, "Once a Cæsarean always a Cæsarean," is quite applicable to extrauterine pregnancy.

Every woman with a history of having skipped a period should be viewed as a possible extrauterine pregnancy until proved otherwise. Irregular bleeding should put one doubly on guard. However, the most important symptom of extrauterine pregnancy is that of syncope, usually associated with pain but sometimes occurring without any discomfort or apparent cause. Patients very rarely volunteer the information of having fainted, and therefore it must be elicited by questioning. When these seizures are repeated and associated with severe cramp-like pains of short duration, the diagnosis is almost positive even though apparently contradicted by subsequent physical examination.

Strange as it may seem, even the cases of rupture of the tube with hemorrhage are not always correctly diagnosed: first, if encapsulation of hemorrhage between the layers of the broad ligament takes place; second, if the bleeding is of the type of a slow ooze.

Testicular Implantations for Acne.

STANLEY (*Urologic and Cutaneous Review*, January, 1926) reports on 66 cases of acne treated in the Medical Department of San Quentin prison. He devised a method of implantation from animals to man by which the glandular principle of the testis is injected under the skin of the abdomen. The substance injected has the consistency of tooth paste and may remain palpable under the skin for weeks or even months. Most of the patients were between eighteen and twenty-five years of age. Of the 66 cases treated 54 were benefited and 12 were not. The testimony of the patients is briefly abstracted and in the main is in favor of the treatment. Usually one, at times two, and exceptionally three, injections were given, at intervals of about a month.

Some Practical Points in the Diagnosis and Treatment of Acute Pancreatitis.

WOLFER (*Illinois Medical Journal*, January, 1926) holds that acute pancreatitis is usually secondary to some inflammatory process, often intraperitoneal. It may be a complication of acute parotitis or one of the acute infectious diseases.

Most of these cases recover without surgical interference, in so far as the pancreas is concerned.

The presence of pancreatitis should be suspected in many dyspeptics who have pain in the left upper abdomen or who may be suffering from appendicitis or cholecystitis.

In many instances the diagnosis of acute pancreatitis can only be made on the operating table, by observing the presence of fat necrosis, and subsequently exploring the pancreas.

The pancreas should be explored more frequently when operating for cholecystitis

or appendicitis, or in those individuals who have complained of frequent attacks of acute dyspepsia.

Drainage of the pancreas or peripancreatic tissue in acute pancreatitis will result in many recoveries.

Infantile Otitis Media.

DRURY (*Boston Medical and Surgical Journal*, Jan. 21, 1926) states that the occurrence of otitis media in infancy is principally favored by the anatomical conditions of the infantile auditory duct. The tympanic cavity of infants contains abundant mucous tissue and plenty of fluid in the first two weeks of life. Both are excellent culture media for invading bacteria. The edematous tissue is subject to very rapid purulent transformations, and, as there are accumulations of it in the upper tympanic cavity, epitympanic suppurations in infants and young children are of frequent occurrence and by no means devoid of danger. During the same period the middle-ear spaces are not freely permeable. The epitympanum and the upper part of the mesotympanum are infiltrated with connective tissue bridges and mucosal septa. Thus it comes to pass that with the onset of an infection a large number of disseminated small inflammatory foci are partly in intercommunication and partly isolated and segregated by the mucosal septa. Under these circumstances there is very little chance, once purulent transformation has begun, for early and convenient escape of pus. It is only after fluidification of the entire mucous tissue of the middle ear and formation of a true empyema of the tympanic cavity that spontaneous drainage can be hoped for. Up to that time extensive swelling and deep ulcerations of the middle-ear mucosa will develop.

The frequency of middle-ear affections decreases steadily with the advancing age of childhood, but even as they grow older they are still more prone to this affection than are adults. Among all the diseases of infants none is probably so frequently overlooked as otitis. Aids in establishing diagnosis are: the condition of the membrane, such as hyperemia at the handle of the malleus and at the periphery, radiating injections of the vessels, cloudiness and yellow discoloration, and bulging of the central portion, sudden restlessness, constant crying, tremor of the lower jaw, when unilateral, the patient becoming quiet when laid on the affected side, and perhaps extending its hand to the affected side, while the pain seems to be in paroxysms, and generally worse during the night.

Regardless of the age or condition a bulging drum membrane in presence of fever calls for incision. No harm is done to the ear by the free incision properly made, while much harm as the result of chronic otitis media and mastoid disease may occur when the incision is delayed. The drum membrane should be incised from below upward and into the meatal wall. Pus may not be evident at first, but is established in two or three days. Oftentimes the incision made in the drum will heal over by clot formation unless the ear is gently syringed. Cases often show great tendency to frequent relapse, and when this does happen the main cause will be found in the nasopharynx.

Pitfalls in Surgical Diagnosis.

WATERHOUSE (*The Practitioner*, January, 1926) quotes five conditions which have proved sources of error in diagnosis to able practitioners. Acute osteomyelitis without question is a common surgical condition in which diagnosis is most frequently not made until irreparable damage has been done, and limb, or even life, endangered by the delay.

Acute osteomyelitis presents itself in two types: (1) The ultra-acute type caused by the virulent staphylococcus aureus; and (2) the type, less violent in its onset, caused by staphylococcus albus, streptococcus, pneumococcus, bacilli coli, bacillus typhosus, etc. The former type ought always to be diagnosed at the onset, because the symptoms are definite and unmistakable. In the latter type an error in diagnosis is much more pardonable.

In cases originating in adult age it is noteworthy that the disease more frequently starts about the middle of the shaft of a long bone, and not, as in children, at one end of the diaphysis. These cases in adults are almost invariably missed in diagnosis until pus reaches the periosteum.

A common error regarding the disease is that it only occurs in the long bones. No bone in the body is exempt. It is an extraordinary fact that osteomyelitis almost always occurs, not during the acute stage of the predisposing condition, but after it has subsided and is nearly forgotten. Thus, in three instances in which acute osteomyelitis followed a boil, an interval of about three weeks elapsed between the boil and its serious sequence.

An important point to bear in mind is that in osteomyelitis the inflammation arising in the marrow—*i.e.*, being deeply situated in the bone—frequently presents no signs of its presence except tenderness on deep pressure.

In the early, *i.e.* the easily curable, stage of osteomyelitis there is no local heat, no redness, and no swelling. Pain will be present, but varies in intensity in different instances, and may, in cases not due to the staphylococcus aureus, be almost negligible. The diagnosis of acute osteomyelitis is generally made on the ground of a sudden rise of temperature, possibly a rigor, a feeling of malaise, a pain which at first need not be severe, in a long bone just above or below a joint, and, far more important, marked tenderness on firm, deep, and prolonged pressure over the site of the pain.

Given such signs it is the bounden duty of the medical attendant to have one or more openings made into the bone right down into the medullary cavity to relieve the tension and to save necrosis. Delay means rapid extension of the inflammation, necrosis, and dire danger. Early relief to the tension insures speedy recovery with undamaged limb.

Subphrenic abscess, a dangerous condition, a collection of pus beneath the vault of the diaphragm, is generally missed in diagnosis, because it is never thought of. It is true that, owing to the realization of the need for immediate operative treatment of appendicitis, and of other abdominal emergencies, subphrenic abscess is becoming less frequent, but it still takes a large toll of human life, and is far too often overlooked in diagnosis. When, any time from two weeks to two months after a septic lesion in the abdominal cavity, a patient who has appeared to be well on the road to recovery develops continuous fever, elevation of pulse-rate and malaise, and no definite cause can be found for the rapid deterioration in health, the possibility of a subphrenic abscess should be seriously considered.

In a subphrenic abscess, situated immediately above the liver, a marked, localized, upward convexity of the diaphragm will always be observed in the radiogram, whereas in a basal pleural effusion, especially when purulent, the normal convexity of the right dome of the diaphragm will be diminished, and may disappear completely, so that the diaphragm becomes horizontal.

An important diagnostic point is that an effusion into the pleural sac caused by pleurisy, pneumonia, and empyema, or pulmonary infarct, starts with dramatic suddenness, with pain in the chest and real difficulty in breathing, whilst a subphrenic abscess takes days to develop, and is painless, certainly at the commencement. Should a pleural effusion be present it should always, in cases of doubt, be examined bacteriologically. If it be found sterile the probability is that it is secondary to a subphrenic abscess.

Frequently a definite diagnosis of subphrenic abscess can only be made by puncture with a needle of an aspirator; but this may only be done when everything is prepared for the drainage of the abscess if, and when, found.

The mortality of subphrenic abscess is high because the condition is so frequently missed in diagnosis. It goes without saying that the sooner the diagnosis is made, and the abscess drained, the better the chances of recovery. There are few more life-saving operations than a timely one for subphrenic abscess.

In some instances of perforation of a gas-

tric ulcer, a wonderful temporary improvement in the symptoms may occur before the graver signs of peritonitis develop, and this temporary improvement may be very misleading. Of cases of acute perforation of a gastric ulcer, operated upon within twelve hours of perforation, 90 per cent recover, whereas of those operated upon after forty-eight hours 90 per cent die.

It sometimes happens that the surgeon, called to an abdominal case, can get no further in diagnosis than that of a very probable perforation of a gastric ulcer. In such a case immediate operative treatment is urged because in every instance, in Waterhouse's experience, the lesion present has been either a perforated gastric ulcer or some condition equally calling for operative treatment. In perforation of a duodenal ulcer the period of reaction, to which attention has been drawn after a gastric perforation, rarely, if ever, shows anything like the same marked temporary amelioration of symptoms that is often noticed after gastric perforations.

As to further pitfalls in diagnosis the author alludes to the sudden cessation of symptoms and the extraordinary temporary improvement that may follow gangrene of the appendix. He attributes his true appraisement of this wonderful and sudden cessation of all symptoms in gangrene to an instructive talk he had with the late J. B. Murphy, who stated that "The dead appendix ceases to absorb its noxious contents, and therefore pulse and temperature fall to normal. The nerves of the appendix are dead, and therefore pain ceases. Adhesions can only be formed between two living surfaces. The appendix being a dead thing, no adhesions will be formed to it and, therefore, there is the awful danger of diffuse septic peritonitis when the microbes pass through the gangrenous walls of the appendix, or it drops off."

As a final pitfall to the surgeon inversion of the testis is mentioned, by which is meant that the epididymis is placed anteriorly, the body of the testis being behind it. This misplacement is supposed to be present and unilateral in about one out of 75 men. It becomes a pitfall in the operation of tapping a hydrocele. An instance of this is quoted as follows:

A young medical practitioner, who had just bought a country practice, had, as one of his first patients, the Squire, who had a large hydrocele. Three times the practitioner plunged the trocar into the front of what he took to be a hydrocele, but only blood escaped, and on the third occasion the patient fainted. Hematocele quickly resulted, and later suppuration of the testicle, calling for castration.

The Treatment of Duodenal Ulcer.

PANNETT *(Lancet,* Jan. 9, 1926) explains the site of both gastric and duodenal ulcers on the basis that they occur where the gastric and duodenal secretions meet. Since these ulcers are prone to become callous he believes that excision theoretically offers a more assured means of cure than does gastrojejunostomy. It is an undoubted truth that very many duodenal ulcers, even callous lesions, will heal after gastrojejunostomy. There is not agreement, however, on the proportion of cured patients which results.

Moynihan, Mayo, and Sherren claim 90 per cent or more cures. Such great satisfaction with the operation has not been expressed by other surgeons of eminence, more especially those on the continent of Europe, amongst others Finsterer, Haberer, Clairmont, and de Quervain. These latter authorities put the cures down somewhere about 70 per cent or less. Forsyth's interesting researches amongst doctors who, presumably, would receive early and efficient treatment, showed that 58 per cent remained free from symptoms after gastrojejunostomy. Lewisohn found that a little more than one-half the patients are cured and that 18 per cent suffered subsequently from gastrojejunal ulceration. Smithies found that in 17 per cent of cases gross hemorrhages occur after gastrojejunostomy. Sometimes this bleeding may lead to a fatal result. Very much rarer is the occurrence of perforation after gastrojejunostomy. Nevertheless this has happened.

Turning to partial duodenectomy we are confronted with a difficult and tedious tech-

nical procedure, and very extensive surrounding fibrosis may make resection impossible, as happens indeed sometimes with a gastric ulcer. The risks of the operation are particularly injury to the bile or pancreatic ducts or the pancreas itself.

Finsterer has been able to carry out 71 resections with only a 1.4 per cent mortality. Whether partial duodenectomy will take the place of gastrojejunostomy will depend upon the end-results obtained by the operation, and the development of a technique which will make the procedure more easily carried out. The last condition, however, is not absolutely essential. We do not yet know the end-results of duodenal resection. Finsterer reports 93.9 per cent absolute five-year cures amongst 63 cases. De Quervain, a most careful and cautious observer, asserts that resection of the duodenum gives better results than gastrojejunostomy, but does not give figures.

Reviews

MEDICAL DIAGNOSIS. For Students and Practitioners. By Charles Lyman Greene, M.D. Sixth edition, revised and enlarged, copiously illustrated. P. Blakiston Son & Company, Philadelphia, 1926. Price $12.

Every now and then there appears in medical literature a remarkable book which deservedly attracts attention and then establishes and later maintains its popularity. Such a book is represented in the one under review. It is interesting to find that the space of 1468 pages can be taken up in dealing with the subject of Medical Diagnosis. It is also interesting to find that this book contains 14 colored plates and 709 other illustrations, all of which are well executed. Repeatedly the author deems it proper, on almost every page, to place statements that he considers of superlative importance in italics, and not only these, but along the margin of the pages there are headings indicating just what a given paragraph contains. Thus, for example, under suppurative tonsillitis (quinsy), the lateral word is "Dangerous" and the text reads, "Both tonsils may be involved, the pus burrow with unexpected rapidity, and even edema of the glottis may occur," and then in italics, "Quinsy should not be allowed to go on to spontaneous rupture." These quotations not only illustrate the arrangement of the text, but also that the author from time to time gives valuable and correct therapeutic advice. The very size of the volume makes it clear that the author has not only included methods of diagnosis by physical examination, but also by all the instrumentalities which are relied on in modern medicine, including physiological chemistry and laboratory investigation with its various tests. The part upon Diseases of the Heart, with illustrations of electrocardiographic tracings, is well brought up to date, and the author deserves the utmost credit for not only having produced a book in the first edition which was of extraordinary merit, but for maintaining his enthusiasm in revising carefully the text of such an enormous volume no less than six times.

SIXTY YEARS IN MEDICAL HARNESS. By Charles B. Johnson, M.D. With an introduction by Victor Robinson, M.D. The Medical Life Press, New York, 1926. Price $3.

Dr. Johnson has already written more than one book, or monograph, upon medical life, as, for example, one upon "Illinois in the 60's," another upon "Muskets in Medicine," and still another upon "Medicine in Champagne County." In more than 300 pages he writes in an entertaining way of points in his career which he thinks will be of interest not only to those of his contemporaries who may survive, but to younger medical men as well. The book is freely illustrated with pictures which are suitable to the text, and its text defines the type of man which pursued the profes-

sion of medicine decade by decade from 1862 until 1925. Sadness and joy are pictured from time to time in a telling way, and the author goes outside his immediate surroundings to write clearly of eminent medical men in various parts of the United States who stood first and foremost in their day and generation.

COLLECTED PAPERS BY THE STAFF OF THE HENRY FORD HOSPITAL. First series, 1915-1925, freely illustrated. Paul B. Hoeber, Inc., New York, 1926.

As its title indicates, this volume consists of publications made by members of the Staff of the Henry Ford Hospital, Detroit, during a period of ten years. After a foreword written by Dr. Sladen, which is historical as to the advances in medicine, there comes a long list of former members of the Staff of this hospital, followed by other lists of the Board of Trustees and present Staff in their various departments. It is interesting to note how many medical men are now actively engaged in this very remarkable institution; remarkable in the manner of its establishment, the work that it does, and in some of the ideas which control it on the part of its founder and supporter. Most if not all the papers, we believe, have appeared in current medical literature, but this is a most convenient way to bring them together for permanent usefulness. Taking them all in all they are most creditable to the able men who have prepared them.

DISEASE PREVENTION. By Herbert H. Waite, M.D. The Thomas Y. Crowell Company, New York, 1926. Price $4.50.

The author of this volume, which covers with its index, references, and biographical references more than 650 pages, is the Professor of Bacteriology and Pathology in the University of Nebraska. His object is to state in an impressive way what has been done and is being done by science to check disease. Naturally, he begins with a consideration of the history of preventive measures, and then those methods which have been resorted to to ascertain how a given disease originates and spreads, whether it be by contact, by bites of insects, the presence of parasites, or the entrance of pathogenic germs into the body; and he well says that in the realm of medicine there is no measure of greater importance than prevention. He gives credit to Garrison's History of Medicine for many of the facts which he embodies in his text.

It is Dr. Waite's hope that the book possesses enough interest to lead many laymen to study its pages in order that the campaign which he is carrying on may enlist a greater number of privates in the ranks.

In his early pages he gives an interesting reference to the introduction of vaccination, and later describes the dreadful onslaught made by professors of obstetrics upon Oliver Wendell Holmes for his expressed belief in the communicability of puerperal fever.

The book reveals an immense amount of literary labor and is a distinct addition to that type of literature which should be put in the hands of social workers, students of public health and hygiene, and boards of health.

THE BIOLOGY OF THE INTERNAL SECRETIONS. By Francis X. Dercum, M.D., Ph.D. The W. B. Saunders Company, Philadelphia.

Dr. Dercum in this small volume of less than 250 pages deals with the endocrine factor in development and in its relation to subnormalities, neoplasms and malignancy, in nervous and mental diseases, and in heredity.

In these days when there seems so much chaos in our knowledge of the functions of the glands of internal secretion, it is encouraging to learn that the author believes that the basic facts which underly our knowledge of the internal secretions arrange themselves in a natural and proper sequence. The author believes that the phenomena represented by the internal secretions are in their ultimate analysis problems of metabolism, and so he begins with a consideration of the elemental facts of metabolism in cellular forms and goes on to a consideration of these facts in regard to cell aggregates.

After this the subjects of enzymes and catalysts claim attention, and then the picture of the metazoa comes into view.

Naturally in a book of this kind the subject of glandular secretion is carefully considered both from the standpoint of inactivity and excessive activity.

The text is made up of 21 chapters, and is exhaustive not in the sense that it is verbose, but because of its wide field; thus in chapter three he deals with the relation of metabolic laws to the developmental system, and then goes on to a consideration of various glands of internal secretion, to the sympathetic nervous system, the connective tissue group, the vitamins, and important sex gland interrelations. At the moment it is not clear to us why vitamins should be interpolated at this point. The final four chapters deal, as might be expected from the pen of such an eminent neurologist, with the relationships between the endocrines and nervous and mental diseases and other phenomena.

The text reveals that this book is the result of much thought and study.

GASTRIC FUNCTION IN HEALTH AND DISEASE. By John A. Ryle, M.D., F.R.C.P. The Oxford University Press, New York, 1926. Price $2.75.

The author tells us that with the exception of some modifications and a few minor corrections and rearrangements, this book is a reprint of his Goulstonian Lectures on the Study of Gastric Function in Health and Disease which were delivered before the Royal College of Physicians in March, 1925, and later published in the London *Lancet*. The experimental work has already been described in Guy's Hospital Reports, Volume LXXI, 1921. The author has divided his text into three parts: One, which covers only 43 pages, deals with Gastric Function in Health; the second of 37 pages, with Gastric Function in Disease; and the third continues in reality the same theme and contains chapters, or divisions, on the nature and classification of dyspepsias, gastrojejunostomy and its sequelæ, and the conclusions which the author has reached. Many of our readers will be interested to know that in these conclusions he emphasizes a point which is characteristic of the whole text, and which is worthy of consideration at this day when there is a tendency to regard all forms of indigestion as manifestations of definite pathological change. The author is evidently one of those who believes that there are many conditions which do not depend upon pathological change as that term is commonly employed, and we firmly believe that he is right in this conclusion. His references do not deal with any literature except that of England, with the exception of one reference to the *Munich Journal*, but in his appendix, as an afterthought, in the space of three pages he refers to the use of fractional analysis as carried out by the Rehfuss or Einhorn tube and presents an illustration of his own tube. The book closes with an index of authors and with an index as to the text itself.

AN ESSAY ON THE PHYSIOLOGY OF THE MIND. By Francis X. Dercum, M.D. The W. B. Saunders Company, Philadelphia, 1925. Second edition.

Dr. Dercum is well known to the medical profession not only because of his prominence as a practitioner and teacher, but also because he, from time to time in the past, has made notable contributions to borderline literature between medicine and philosophy, and in this little volume of less than 150 pages he deals with the recondite problems of consciousness and its elemental phenomena; then with the remarkable physical facts definitely shown in response of the organism, facts which possess a profound significance and which very greatly influence our conception both of the structure of protoplasm and of the limitations which this structure imposes. Dealing with this difficult topic the author has endeavored to use, and has succeeded in using, language as simple as possible to convey the ideas which he wishes to group around the main stem of his theories. The work is well done and reveals the labor of a mind capable of delving deeply into problems too deep for the average writer in neurology and psychiatry.